

SECRETS OF BEE-KEEPING.



By K. P. KIDDER.

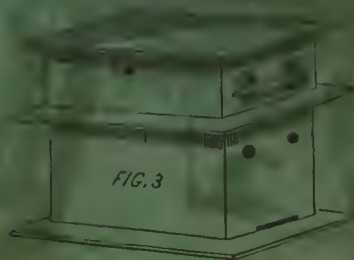


FIG. 3



SECRETS

—OF—

BEE-KEEPING.

Second Edition.

By K. P. KIDDER, Apiculturist.

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INTRODUCTION.

Continual experience is a continual teacher in every department of human life. The dawning of science was but a precursor that in the unfathomable depths of immensity was boundless intelligence. No one has been able to grasp her ever present yet mysterious truths. Diversities in the mineral, the vegetable and animal world but point man to the fact that the same diversities exist in the human brain; for man, the ultimate of the primate, must forever look below him to have mirrored out the exact shadow of the man within. Hence we find the *Chemist* dissolving the combined elements; the *Geologist* disintegrating the rocky stratas; the *Zoologist* studying the animal; the *Ornithologist*, the fowl; the *Naturalist*, a combination of insects, fowls and animals. So every man's pursuit but reveals the Motor within. Being subject myself to the universal law that controls humanity, I must obey the impulse of the soul. I can better serve myself and my fellowmen by such a course than to create continual discord within my own bosom. Shall I labor at the forge? when if my hands were to obey what is in the mind's eye they would mould the iron into the form of a Bee. Shall I hold the plow? when the first passing bee whispers in my ear, Follow me. When every flower seems imperfect, without a bee nestling in its bosom, and the insect world is divested of its beauties without them—when every passing breeze that bears its busy hum to my impassioned soul, repeats the language, he is your Teacher.

I am aware there has been much written concerning this little insect and many truths relating to its peculiarities have been unfolded: that errors have crept into these publications, many times from ignorance and perhaps not a few times from egotism;

from having a strong desire to appear before the public as expounders of that which to the masses seemed clothed with mystery. I have no doubt that much more remains for some yet unbidden mind to bring to light, and in the many paths of science some eccentric genius will place their perfect history in the vast library of time. To accomplish this is more than I expect, and should the reader of to-day consider his knowledge as the best, how soon he will learn his mistake if not "joined to his idols." Let this be no hindrance,—“to err is human,” to learn, and learn aright, is divine.

To me there appears to be many obstacles yet in our path of progress. What these are and how best to remove them is at this time of vast importance. Of the numerous book publications of to-day, how many of the writers agree? No two of the number, I can safely say. Whence these discrepancies? Is the language of the bee a confusion of tongues, or has man been rearing a modern Babel whose towering walls must crumble to decay and become a monument of ignorance for future generations to behold. Is not the language of the bee the same in Vermont as in New York, Pennsylvania or Ohio? Is it not the same in Europe as America? Do they not speak one universal language the world over? From the heaths of Germany to the shores of the Pacific, in every latitude that favors their cultivation they speak volumes to their keepers. And I desire to impress it upon the mind of every Bee Keeper throughout the land, Let your bees become your Teachers. Does not the Physiological structure of the bee say, Protect me from the cold of Winter and I'll sing the songs of industry for you in summer. Does the prosperous farmer leave his neat cattle and fine horses without protection through the chilling blasts of winter? How much tenderer are your bees? yet but few get more protection in winter than in summer. Do you not fill your barns and granaries for your sheep and cattle? Yet if your bees do not collect enough for themselves and without your help, enough is given them in the form of brimstone to settle the matter at once, this being cheaper than honey. Should we not give them a fair chance in the march of improvement? I am answered by a thousand voices, Have we not expended thousands of dollars for improved hives and we are no better off than before. This is just what I want you to know.—Had you studied your bees more and depended less on the pretended knowledge of others, your practiced eye would have led you in a different path, you would have seen these monstrous defects, that have well nigh proved your ruin and the utter de-

struction of the bee. No hive in the world ever has, or ever will, provide honey for your bees, unless deposits of it are within their reach and they are allowed to gather it. Yet where is the man that has expended a single dollar to cultivate trees in his yards and plants in his fields that will secrete saccharine matter for his bees, resinous properties for Propolis and Pollen, or Farina for Bee-bread, in continued succession from Spring till Fall. Provision against starvation is made by man for every domesticated animal, fowl or insect he makes use of, the honey bee excepted.— They are left to provide for themselves, while the woodsman's axo hews down with impunity the tree that would aid them in Spring. The fields are overrun with teeming herds in summer; the sickle steps in in Fall to fulfill the closing scene. Nature shorn of her flowers from Spring till Fall; the first, the last and only dependance of the bee taken from them without even giving them a single thought. Shame! For shame! Men, who profess to be intelligent, can you succeed? can you prosper in such a course as this? Never. I say never. The very course you have been pursuing has been one continued, sure and yet silent invocation to their destruction. Stop! I say to my fellow countrymen, stop! Let Wisdom take the place of ignorance; industry that of negligence; happiness and prosperity instead of sorrow, disappointment and want;—and then, and not till then, can you become successful. The idea is suggestive. What are we to do? and how commence to do it?

I will give you my views on the subject. Will others do the same? "The agitation of thought is the beginning of wisdom."

First, let the bee-keepers of every Town meet semi-annually in Convention; elect a President, Vice President, Treasurer and Secretary.

Then a mutual exchange of thoughts, opinions, practices, &c., may be discussed with freedom, on all points tending to revolutionize the present destructive policy towards ourselves and bees. Where Counties hold Annual Fairs, instead of meeting by Towns, let every Town be well represented, and hold a Convention during such Fair, and, if possible, procure the services of some able person to address you on this particular subject. It will naturally stimulate the mind to exercise itself on particular points, where failures have occurred. Amongst questions to be discussed, I consider the following very essential:

Honey producing plants or trees; Locations for Apiaries; Style of hives best adapted to protect your bees in winter, and facilitate their labors in summer, and effectually guard them against all in-

truders—such as moths, millers, robbers, &c.—the best adapted for hiving, ventilation and having perfect control of your swarms; the kind of bees kept—whether the common black bee or Italians; their hardiness and qualities; liabilities to evils pertaining to both should be especially brought to notice.

More liberal premiums should be offered by Agricultural Societies in this particular branch of rural economy; and this should be urged until the end is accomplished.

For more extended remarks in relation to the importance of instituting a thorough change, I can do no better than to quote some suggestions from a report on *Bee Culture*, by William Buckisch, *Hortontown Texas*, Patent Office Report for 1860:

“Among the means best adapted to the promotion and general distribution of bee-culture, instruction and practice rank the highest. There are already many good bee-manuals, the influence of which, however, should be increased by the establishment of a special journal for bee-culture, and model bee-houses. From the importance of bee-culture, in respect to national economy, model bee-stands ought to be put up both by the *National* and *State* Governments.

“Such model bee-stands might be attached to the Agricultural Division of the Patent Office, under the management of a special bee-master. The object of such a model bee-house would be to promote bee-culture, not only by distributing swarms and queens, but by diffusing practical knowledge among the public at large, and generally serving as a bee-school, to teach by practical demonstrations the natural history and habits of the bee, and to show all the operations and manipulations in bee-keeping; for instance, the production of artificial swarms, hiving, taking out honey, &c.

“This object might be still further secured in establishments of a similar character by all the State Governments, in connection with the several State Agricultural Colleges, or other similar institutions. Such establishments based upon the results and experience of modern investigations and principles, laid down by Science herself, and by recognized masters in this branch of industry, should be conducted only by intelligent and practical men, who, by long experience, have become thoroughly acquainted with the progress made in bee-culture and its present condition.

“To any objections against such model or experimental bee-stands on the ground of expense, it may be replied that they would not only sustain themselves, but, beyond the great object to be attained—the general promotion of bee-culture throughout the

country—they would, likewise furnish a rich revenue from their products.”

In the State of New York alone, according to the census report of 1850, 1,755,830 lbs of wax and honey were produced.

This amount might in a very short time be increased ten times, worth at the lowest estimate (\$2,000,000) two millions dollars. Shall this immense treasure be thrown away? If once lost, 'tis gone forever. Unlike the fruit, the grain, and almost every other product of the earth, if not gathered almost as soon as secreted by the flowers, it is absorbed by the action of the atmosphere, and forever beyond the reach of man. Even when in the flowers it can be of no use to you, unless you keep *Bees* to gather it.

Having extended this Introduction beyond what I intended, I can hardly close without making a proposition that may be the means of assisting in this grand enterprise. To every *Town*, without regard to State, that will organize *Bee-Conventions*, and establish, or make provisions whereby a library pertaining to the culture of the bee, shall be established, I will present such *Library* with a neatly bound copy of my book on bees. And to every *member* of such Convention, or person taking part therein, that will send their names and Post Office address, I will send one of my book circulars of 32 pages, containing much valuable information, *free—annually*, so long as such Convention shall meet. and send me a report of their doings. I will also furnish the Secretary of such Convention with blanks suitable for organization and reports.

And I also would suggest that such subjects be considered by such conventions as will best promote the interest of bee culture, by thoroughly discussing the principal evils pertaining to them, and the best modes of overcoming them; the different kinds of hives used, and the system practised by each. These Conventions ought to be held in every town twice a year—say the first days of June and September; or where County Fairs are held, it might be well for the different Towns to meet during their County Fairs, in general Convention, instead of separate Conventions as in the Spring. A few hours spent by the members of each Town, in consideration of this important branch of rural economy, would well compensate each Town and County for the time spent. Let the bee-keepers of every Town take a stand and maintain it, that their claims to representation at such Fairs, have never been fully sustained. While fast horses and neat cattle stand highest in the list, *bees* and honey are not considered of importance enough,

to even gain an entrance in the list—or if put in, the *Premiums offered* are better calculated to discourage than to encourage the cultivation of the bee. Can we ever bring this important subject up to its proper standard, unless the cultivators of bees will help to do it? I say no! Let every bee-keeper lend a helping hand. Where is the man that will step next upon the platform and give to each Town, a well-bound volume, treating on the management of the bee. Let each man that has published a work on bees, step forward and place his name on the *Register* of donor, and soon every Town in the United States will have a Library that will be valuable and instructive. I make this appeal to my fellow Apiculturists, that have tried to brave the storm of adversity, and dispel the midnight darkness that has so long draped in mystery the character and habits of the bee. Let us act! and thousands from their rural homes will give us a hearty response, by accepting our offers to try and advance the common interests of mankind.

To better aid the now beginner, and class the evils attending bee-culture, and lay the basis of a correct system whereby these evils may be overcome, this work is presented for your candid investigation—commencing with the selection of a site for an Apiary, and gradually leading the mind, step by step until it can remove every hindrance, and master every evil that lies in the path of progress to the successful cultivation of the bee.

K. P. KIDDER.

Selecting a Location for an Apiary

AND ITS ARRANGEMENT.

This is an important consideration with the bee-master. While every rural homo is favored with a suitable place in which a few swarms of bees can be profitably kept, a serious neglect in choosing such place is many times a disadvantage to the owner. Perhaps a few hints to the novice will not be inappropriate in this little work. First, let the place be on a dry soil, and if convenient in some quiet spot, away from the busy routine of the domestic circle. It should be shaded by trees to relieve the little occupants from the scorching rays of a burning sun and shield them from too much exposure to strong winds. The best bee-house that was ever used is the shade of a tree and a good hive.

The hives should always face the southeast if possible, as by so doing your bees get the morning sun, and fewer storms come from that direction to beat against the front part of the hives. Let it be selected where they can be readily seen in swarming time from some door or window, from the kitchen if possible, that the women folks may give the alarm in case of swarming. The grass should be kept short by occasionally cutting it, as it is more convenient to get around amongst your bees

and not so much liability of their being lost by falling into the grass. All ant hills in the immediate neighborhood of the Apiary should be destroyed. Spider-webs and the like should be kept away from the hives.

I would recommend the planting of trees where you are not already favored with them and set one or two hives under each tree, always avoiding the setting of bees in a bee-house or room expecting to obtain larger quantities of honey by so doing, as there is no place like the open air for bees while collecting honey. The inconveniences of a room speak decidedly against any such arrangement. The bees and honey are got at with difficulty. Many times the bees build their combs upon the outside of the hives where free access to the room is given them, making it unsafe and even hazardous to attempt to manage them. While they are more likely to be infested with millers, ants, spiders, &c., the inconvenience of removing surplus honey, old combs, or in fact to have any control over them is against any such arrangement.

Where persons are not favored with a situation like the one described above, select the most appropriate place you can, approaching as near as possible to our description; and if you can find no better place, put them in the attic or some room, and give them ingress and ingress to the hive by placing it at some window, giving the bees access out under the window. Sometimes bees do remarkably well in rooms, but we object, if a better place can be found. Localities for Bee pasturage vary much in regard to their value for saccharine deposits. Sections of country where the Alder, Maple, Hickory, Basswood, Whitewood and Chestnut grow, is better than where Pine, Hemlock, Tamarack, Spruce and Cedar is the prevailing timber. Valleys are preferable

to hills or mountains, as bees with a heavy load of honey can fly down hill easier than they can fly up. They will thrive better where cattle are kept than where sheep are pastured. The vast prairies of the West are destined to be the "El Dorado" of bees and honey; perhaps no country in the world of the same extent possesses such a variety of honey producing flowers, from spring till fall, as do these magnificent natural garden Prairies of the West.

Their few wants may easily be supplied by the willing hand of man.

IN BUYING BEES HOW TO TELL A GOOD SWARM.

Much depends on the season of the year you purchase in,—if in Spring, the value lies in the amount of bees present; if in the Fall, the amount of honey.

Much depends on the style of hive the bees are in, whether the colony is old or young, whether it is heavy or light, according to the season in which it is examined, whether the weight is in the materials of which the hive is made, or in Honey or Bee-bread, and their comparative proportions to the whole weight combined.

There are many styles of hives that will not admit of such examinations as are necessary to ascertain these facts. Therefore I will confine myself to the old-fashioned box or straw hives, and movable comb hives, that secure the advantages of moving each comb separately.

BUYING BEES IN THE OLD STYLE OF HIVES IN THE SPRING.—*First*, fumigate the bees slightly to drive them up among the combs; then lift the hive, judge of its weight, then turn it bottom side up and examine the combs; they should be straight, for such combs are bet-

ter for transferring purposes, they should be light-colored, as this would indicate the swarm to be a young one. Take your fingers and pull the combs apart enough that you can see well into them; by so doing you can ascertain the presence of young brood. If this is present, it will indicate a fertile queen in most cases. The comb should be mostly of the worker kind, as worker bees are what you want, and they can only be reared in such comb,—it is easily distinguished from drone comb, the cells of the latter being much larger than that of the workers. A good quantity of bees should be present.—Mouldy combs, or those filled to excess with bee bread, should be rejected; the latter adds much to the weight and lessens the capacity of the hive for rearing young and all surplus stores, it lessens the value of the swarm in proportion to the quantity present above their wants. In the absence of the above defects, with the advantages pointed out in addition to plenty of honey, such a colony may be considered a good one.

IN SUMMER.—All the above requisites are necessary, with an increased quantity of honey and bees; when a swarm leaves the parent hive and clusters, a peck of bees may be considered a good swarm.

IN FALL.—This is now the most difficult season to determine the true value of a swarm. In the Spring, the value lies in the amount of bees present, with the other requisites given. In the Fall, the amount of honey present determines the value, and if the colony is three or four years old, or more, persons are very liable to be deceived as to their true value, on account of a large quantity of bee bread being present in such hives.—Young swarms that are heavy with a fair quantity of bees in them, at this season of the year, may be considered the best.

IN MY HIVES.—The same conditions are necessary to insure a good swarm. The examination can be more satisfactory than in the former cases;—the frames can be taken out separately and examined. The presence of Queen, brood, workers, or drones, the amount of honey, bee bread, and general condition of the hive can be known at all times; and by following the foregoing directions, it will be an easy matter to determine their value. The presence of bee bread cannot be detected in old combs without cutting into them, as the bees fill the cells nearly full of bread and the balance in honey and then seal it over so it will keep moist for future use. To all appearances it looks like honey. Here is another advantage of the movable comb hive over all others, as every comb can be examined, which is not the case with any other hive.

WHAT A BEE HIVE SHOULD BE.

In recommending a movable comb hive, I want it understood that there is a great difference between these hives. A hive may be too large or too small, too high or too low, too cold for winter or too warm for summer, convenient or inconvenient, for the bees or their master. The hive may contain movable frames, but of such construction that they become immovable when filled with combs and honey. There is no doubt but a movable comb hive is indispensable to the successful management of the bee, but it must be of that form that combines *utile dulci*, or you have made a poor beginning. Every point that tends to facilitate the labors of the bee, and at the same time give the bee master perfect control over his hives, is also desirable. To combine all these qualities in a complete hive, and at the same time, reduce to practice a general system of management for the

Agriculturist to follow, has been my study for a number of years. And the great sale of my hives and publications for the last few years, with an increase almost unprecedented, is one of the highest encomiums that public opinion can bestow in their favor. From Maine to California, one universal expression of approbation of their merits stimulates me to accomplish that which I have undertaken,—to create a revolution in Apiculture. In order to present more fully, and at the same time, more comprehensive views what a Bee Hive should be, I have divided my system of bee keeping into a calendar of Spring, Summer, Fall and Winter management, adapting my hive to meet the particular wants of the bees and their masters at all of these seasons :

First, A hive should be made of good merchantable Pine lumber, well painted and of a convenient size to hold a good swarm of bees, and still be convenient for any person to handle ; should be so constructed that a swarm of bees can be put into it or taken out in a few moments time without injuring the bees or combs ; should be so that you can control the entrance at all times ; should be so that if necessary it can be adapted for swarming or non-swarming purposes ; should be so ventilated that a swarm can be carried any distance in cold or warm weather, or kept at an even temperature both summer and winter ; should be so that all moisture from the breath of the bees, or otherways, cannot collect in the hive, or drip on the bees or combs ; should be so that they can be securely guarded against robbery, or injury from all intruders. In fact it should possess every facility for man and bees that is needed for the convenience of the one and profit of the other. The hive should be of that size that one man can handle it full or empty,—the brood-box holding a trifle over one bushel,

with a dead air space around the entire colony, and the comb frames so arranged that the bees will build their combs perfectly straight within them every time. All of these qualities are combined in the Compound Hive.

GENERAL MANAGEMENT OF BEES.

It will be understood that when I speak of hives, I am speaking of the old-fashioned box or straw hive and my Compound and Glass Hives, as these last are the hives my experiments have been conducted in.

I hold that if bees are kept at all some general rules or system of management is necessary for us to follow. If colonies of bees dwindle away and run out it is our business to learn its causes and remedy the evil if we can, and not have it occur the second time.

Should your bees leave your hives for the woods after being hived, should you not use your inventive genius and remedy it if possible? What would you think of a farmer that let his cattle and horses run to the forests and become wild again? The same will apply to your bees.

If the moth miller destroys your bees, must you forever submit to its pestiferous assaults without trying to overcome it?

If your bees die out in winter, learn the cause and overcome the evil and not have it occur again.

If your bees are being robbed, can you not assist the weaker swarms to protect themselves against the stronger?

These and many other evils that will be spoken of hereafter, have given rise to the present hive I now describe in this book.

From frequent examinations and experiments, I am

satisfied one of the great causes of bees dying (or running out, as it is called,) is the combs become old and filled with bee-bread, the cells become small from frequent breeding in them, and unless some way is provided to renew their combs your bees will die out because young bees enough cannot be reared to supply the already decreasing swarm. The space being too limited for raising young, they decrease faster than they increase. The movable Comb Hive is the only remedy in this case, as any or all the combs can be removed at pleasure and empty frames substituted in their stead, which they will readily fill up with new combs and honey if done in the proper time. The best course to pursue with them in the old style of hives, is to break out a part of the old comb and let them build new. To prevent your bees leaving for the forest, in the old style of hives, immediately after having them move them to the stand where they are to remain through the season, as scouts have already gone in pursuit of a new home, as will be seen in a short time after moving the newly hived swarm away from the spot, bees that have been away to find some place in which they can take up their abode will be observed for hours after returning to the place where the swarm alighted, as if to make known the result of their journeys and pilot the clustering swarm to their new residence.

Any other remedy in the common box hive I do not know of. But one thing I do know—if the Queen can not leave with the swarm the bees obey a never failing law, and will not leave the hive but to return. A knowledge of this was the starting point for the invention of my Patent Regulator by which I imprison the Queen, yet do not in the least interfere with the passage of the worker bees, consequently no swarm will ever leave the hive.

To prevent the ravages of the Moth Miller, in the common board or straw hive, go in the morning and examine under each hive and destroy all you can find of the moth worms and millers; bits of board or shingles laid on the stands near your hives for them to collect under if carefully watched are some protection; but if they once get established in the combs or straw you may give them up. There is but one sure remedy with such hives, and that is, do not use them.

A hive constructed so that millers will not enter, and still let bees pass out and in, is a thing that never had an existence only in imagination. Sweetened water, in a common earthen bowl, set near your hives in the evening is a good trap for them, attracted by the aroma or vapor arising from it hundreds of them will be caught by this process. It should be removed away every morning as the bees may get drowned in it.

The best remedy is, have a hive in which you can keep your stocks strong, which is done principally by preventing natural swarming, and at the same time have your hive so arranged that you can get to every part of it should they gain possession.

Various causes destroy bees in winter, or what is termed winter killing.

Loss of Queen during summer frequently occurs, and if in the old fashioned hive it is difficult to discover, and if discovered it is still more difficult to remedy.—Such stocks are sure to perish during winter.

Another cause is, honey, when brought in from the fields, is thin from a quantity of water being united with it, and from deficient ventilation as in old hives, it remains thin and sours, and is unfit for the bees, and they die from eating of the same.

Another cause is over-swarming. In the common

hive, frequently, the honey in the top of the hive, from remaining there too long, becomes candied; if such stocks throw off too many bees they often fail in collecting enough from the fields (and as they make but little use of candied honey,) they must starve.

Over-swarming also weakens the parent colony by their getting reduced so much, that animal heat enough cannot be kept up and they die in consequence.

Failing to collect honey enough, as is frequently the case with after swarms, is another cause; and another is leaving stocks upon the same stands, through the winter, where they stood during summer; in mild, sunny days, your bees are invited out from the hives, many fall upon the snow and never return, and those that are not so destroyed re-enter the hives to perish, for while from the hives they have discharged the foetid matter, the accumulation of weeks and months, their exercise causes them to feed perhaps too greedily of honey, the temperature of which has been reduced by too many bees leaving the hives at once, and should a slight change in the atmosphere occur, even a few degrees lower, you will find hundreds of your bees dead on the bottom boards of your hives.

BEE STANDS.

Good bee stands are necessary appendages of any well-conducted apiary. They should be made of good durable lumber, about two feet wide and four feet in length; this will accommodate two hives, and will be found to be just what you want if artificial swarming is desired, and whether it is desired or not, more than two hives should not be placed on a single stand. These stands should be six or eight inches in height, with a

wide board running widthwise from the ground to the top of the stand, at an angle of about forty-five degrees, to assist the bees in entering the hives when they come home loaded with honey. If this is not done many of the bees will fall in the grass and weeds, and being heavily loaded, are unable to enter the hives and are lost, when, if a board, forming an inclined plane, was put in front of the hives, they would readily crawl up and be saved. These stands may be painted white, giving the apiary the appearance of taste and neatness, in contrast with the white with the beautiful green carpet beneath.

NATURAL SWARMING.

Here is a point in bee management that too little thought or attention is given to, for reasons we have given in another chapter, bees fail to swarm regular. Some seasons they swarm excessively, frequently ruining the parent stock, and quite often the young swarms.

Artificial swarming is preferable where the person is well posted in the system, but as all are not, it becomes necessary to give the best instructions in relation to natural swarming. Where a person has the time to watch their bees, and there is plenty of shrubbery in the immediate vicinity of the apiary for the bees to alight upon, in many cases natural swarming is just as well. It depends very much upon the season, the condition of the colony and the advantages your apiary possesses. One swarm from a colony in a season is usually better than more; in all cases the parent stock should be examined immediately after swarming, and see if too many bees have not left the hive. There should be enough left remaining in the hive, in all cases, to cover the young brood. In case there is not bees enough left to cover

the combs, a part of the new swarm should be returned again to the parent hive. This can be done by shaking a part of them down in front of the old hive when they will immediately enter it. In this way, second or after, swarms may and should be returned as a general thing. Again, unless the old colony is large, and there is plenty of honey in the fields and a fair prospect of its continuing for some days, then it may sometimes be safe to risk a second swarm.

Bees frequently cluster upon the outside of the hive for days or even weeks, hardly doing anything. In this case it is better to artificially swarm them, or give them more air or room, or both, as bees will never cluster upon the outside of the hives if they have plenty of air and room inside. In the old style of hives artificial swarming cannot be resorted to, consequently when they cluster upon the outside of the hives, and refuse to swarm, a box or super should be placed under the hive, and they will immediately go to work. This box should be made the exact size of the hive, about six or eight inches high, without top or bottom, and sit directly under the full hive, closing up the old entrance and making one in the lower box, thus forcing them down through the new entrance. In less than two hours, they will commence extending the combs down and will soon fill the box, thus leaving their idle habits, which their negligent owner has forced upon them. Some thin strips of lumber should be put across the top of the box, just enough to make a separation, which will make it much more convenient when you wish to separate this from the old hive, which is done by blowing a little smoke in at the entrance, and drive them up amongst the combs, then with a honey-knife the two may easily be divided.

When this additional box becomes nearly filled, another one of similar size should be placed under that, and so continue to do through the season, thus preventing the bees from clustering upon the outside of the hive, and at the same time get a large amount of honey, providing they do not swarm. It is not always an indication of swarming when bees lay upon the outside of the hive. When they have been upon the outside of the hive a length of time and all enter the hive, a swarm may be looked for soon. When bees have been very busy and this is changed to unusual quietness, they are apt to swarm in a few hours. The latter part of May, and the months of June and July is the time in which bees usually swarm in the northern States and Canadas, depending much on the weather and flow of honey. When bees do swarm they issue from the hive in great numbers, running and tumbling over one another in great haste until they can fly into the air, where the whole mass fly in circles, in every conceivable direction over the hive, until all that intends to migrate is on the wing.— They then in most cases move off in some direction in a body, still performing their circular movements until they reach some spot on which to cluster or alight. This is usually some branch of a tree, and not unfrequently on the body of a tree, fence corners, currant bushes, &c. During these evolutions, a loud humming sound, such as is not heard at any other time is made by the bees, and may be heard at quite a distance from them.

HOW TO HIVE A SWARM OF BEES IN THE COMMON BOX OR STRAW HIVE.

If they alight on a limb, as is usually the case, first sprinkle them with cold water, as this causes them to

cluster more closely together, cut the limb carefully off with a sharp knife or saw, according to the size of the limb, having your hive in readiness by placing it on the ground or table, elevating the front side two or three inches by placing some little blocks or stones under the corners, shake the bees down in front of it, sprinkling them gently with cold water, in the course of half an hour most of them will enter the hive. Should they light upon any favorite shrub or tree that you do not wish to cut, the hive must be placed directly over them and let them go up into it, or invert your hive, and by the aid of an assistant to hold it under the bees shake them into it; having a cloth ready to spread over the mouth of the hive, carrying them immediately to the stand where they are to remain during the summer, turning them carefully right side up, leaving the cloth under till evening, when it can be removed with safety.

HOW TO HIVE A SWARM OF BEES IN LESS THAN HALF A MINUTE IN KIDDER'S COM- POUND HIVE.

This is a very essential point in swarming time, especially if you keep many stocks, for bees frequently come out from different hives about the same time, and unless prevented, two or three swarms will join together and put the bee-master to serious inconvenience, which is usually overcome by putting them into dry goods boxes, salt barrels, nail kegs, sap buckets, &c.

All this is overcome by the use of my hives. We will now suppose a swarm just issuing from the parent stock, get your hive in readiness while the bees are alighting; as soon as they are well clustered sprinkle them well with cold water; now shake them into the

outside part of the hive; place the other part into it, and the work is done in one-fourth the time I am telling you how to do it. Carry them immediately to the stand where you want them to remain through the summer, and place the Regulator at the lowest gauge, and go about your business; you need not watch them a single moment nor have any one else, and your bees will not leave the hive except to return to fill it with ample stores. Should your bees come out, and two or three swarms go together, put the hive in a non-swarmer condition and it will hold three large swarms of bees with plenty of room to work for the time being.

In hiving bees in the Compound Hive, if the swarm is large, it is best not to let the inner part down to the supporters into three or four inches, until they have time to crawl up amongst the frames, which they will probably do in one hour's time. Some little blocks may be placed under the supporters, say three or four inches in width, and resting on the upper edge of the outer part, in a short time the bees will occupy the inner part, so you can let it down; always remembering to open all the ventilators and leave them open during the first day.—Eight frames should only be used when a swarm is first hived, and these should be at equal distances apart. The boxes should be put on at the time of hiving, but must be turned bottom side up so the bees cannot get into them. *Bees must never be allowed to enter the surplus boxes until they get established in the body part of the hive*, which will take about a week or ten days, depending much on the size of the swarm and the state of the weather. If allowed to enter the boxes, the queen will deposit eggs there, and bees will be reared in consequence, spoiling the surplus stores.

The Separators should not be put in under only two

or three days after hiveing. By this time they will have started combs on most of the frames, and if the Separators are now put in there will be no danger of the bees sticking the combs to them which they sometimes do if this is not observed. By putting the Separators between each frame, the combs will be made perfectly true and straight. *The Separators should be removed* in ten or twelve days, or as soon as the combs are built nearly down. When these are removed the ninth frame must be put in, moving the others close enough together to admit it, and have them at equal distances apart, at which time the surplus boxes should be placed over the frames close together in regular order, so the bees can occupy them, which they will usually do as soon as they get the frames all full. The bee master should bear in mind that there should be several pieces of combs fastened crosswise to each box to induce the bees to occupy them without delay.

HOW TO HIVE A SWARM OF BEES WHEN THEY ALIGHT HIGH UP ON A TREE.

- As they frequently alight in fruit trees, in the garden, too small to climb, and should a limb be cut, it would very much damage the tree, the first process is, to place the hive upon a platform, then by the use of the hivor, which is made upon the principle of a carpenter's mitre box, 24 inches long by 9 inches wide, with side boards 6 inches in height, with an augur hole in the centre, in which a handle should be introduced, of sufficient length to reach them from the ground; it should be held up under the cluster, then the limb on which the bees are, should be shaken slightly by means of the hivor; in less than a minute the greater portions of the bees will be

upon it, which should then be taken down carefully, and shook off in front of the hive upon the platform. Should there remain a few bees upon the limb, they will return to the parent hive. (When the Queen is hived there will be no trouble.)

As in other instances, the swarm should be well sprinkled with cold water at the commencement. If there are tall trees in the garden and natural swarming be allowed, it would be well to have on hand several of these handles of different lengths for this purpose.

HOW TO HIVE A COLONY WHEN THEY ALIGHT UPON THE BODY OF A TREE

First, sprinkle them well with cold water; then take a sheet, bring two corners of it around the tree just below the cluster, holding the other two corners out from the tree, and by the help of an assistant wing the bees into the sheet and shake them down in front of the hive as it stands upon the platform. In this case the main or inner part of the hive should be placed upon the platform, supported by four small blocks half an inch in height. This will allow the bees to pass into the hive rapidly all around. A little cold water sprinkled upon them will have a tendency to hurry them in; then it can be set into the outer part, first brushing the Bees from the outside.

HOW TO APPROACH A SWARM OF BEES WHEN THEY SET UPON THE STAND.

Which should always be with care and caution. The bee-keeper must not manifest any fear before the hive, and avoid making any quick motions or striking towards them, as they will take that as a signal for an attack.

Many inexperienced bee-keepers frequently think their bees intend to sting when in fact they do not. If their master will take no notice of their buzzing they will seldom make an attack. When bees are enraged their hum is very fine and sharp, and scent very strong. Then the prudent bee-man will be on his guard. If bees are properly managed there will be but little danger of being stung. But should their master make a miss-move or perchance jar the hive accidentally and they become enraged, then I would advise the operator to have an errand in another direction about that time. But when a retreat is made do so easily and not let the bees know that you are afraid of them; if you do, look out for their weapons. A breath of smoke from the fumigation pipe should always be given them at first.

If a bee-keeper is actually afraid of his bees I would recommend the use of a Protector, which is described in this book. For further instructions read chapter on sting of bees.

HOW TO KEEP BEES IN THE SAME HIVE FROM YEAR TO YEAR SUCCESSFULLY.

It will be noticed that young swarms if they come off early, do much better for a year or two than afterwards. The reason is this, the comb is bright and new, the cells are of full capacity to give full sized, strong and healthy bees, an overplus of bee-bread is not stored for the first year or two,—a substance that is never removed only what is needed for the young and rather than use it after standing in the cells over winter, the bees will venture out in early spring to collect new for this purpose. Hence the importance of furnishing substitutes for bee-bread in early spring, as it will save thou-

sands of bees at that season of the year. Many bees are lost by venturing too far away, at a time when sudden storms and changes prevent their returning. If you have a movable frame hive you can always keep the combs bright and new. As a general rule four years is long enough for comb to be used, unless you are acquainted with its true condition. Where the combs contain all worker cells, and are not over stocked with bee bread, they may be used double that time with safety. ✽

A very good way to remove combs is to take some of the full frames of honey that has been taken from the hive during the summer; if they are new combs, these may be exchanged in the fall for the old ones, and there is less young brood at this season of the year,—and what there is should be placed so as to occupy the centre of the hive. When the bees are looked over in the spring, these old combs can be placed on one side of the hive, preparatory for removing them entirely from the hive; either at the commencement of the honey season, or in the fall as above described,—thus removing the old combs the second year, from the time you wish to renew them; making it equal in every respect to a young swarm. This course may be pursued from time to time, and bees kept in the same hive almost any number of years.

Your bees do not die because they are three, five, or six years old; the life of the worker bee does not exceed twelve months; if hatched in the height of the honey season, they often go the fields the same day they emerge from the cells, and their ungovernable desire for sweet leads them from day to day to the fields, and many times their excessive labor is such, that but few pass the first six months.

Sometimes accidents befall the queen, which incap-

acitates her for the duties required ; such swarms if not supplied with a new queen, or facilities for rearing one, will dwindle away and die.

A movable comb hive here is indispensable ; as the combs become old the capacity of the cells is lessened by the continued breeding in them, every bee that is hatched comes forth from the cell leaving behind, and attached to the cell, a fine silken lining or cocoon, that it has spun for itself, while in the larva state. A continued succession of these layers thicken the walls of the cells, to that extent that in time the cells become so small ; that bees bred in them are dwarfed in size, and are incapacitated for the duties necessary for their maintainance. At times large quantities of bee bread are deposited in the cells, and unless cleaned out (a thing seldom done) forever destroy such cells for the rearing of young bees. The space being limited for raising young, they decrease faster than they increase. The movable Comb Hive is the only remedy in this case, as any or all the combs can be removed at pleasure and empty frames substituted in their stead, which they will readily fill up with new combs and honey if changed in the proper time. The best course to pursue with them in the old style of hives is to break out a part of the comb and let them build new. To prevent your bees leaving for the forest in swarming time, immediately after hiving, remove them a few rods from the place where they were hived, as scouts have already gone in pursuit of an abode for the swarm ; as will be seen in a short time after moving the newly hived swarm away from the spot, bees that have been away to find some place in which they can take up their abode, will be observed for hours returning to the place where the swarm alighted, as if to make known the result of their journeys and pilot the clustering swarm to their new home.

Any other remedy in the common box hive I do not know of. But one thing I do know—if the queen cannot leave with the swarm the bees obey a never failing law, and will not leave the hive but to return.

To prevent the ravages of the moth miller, in the common board or straw hive, go in the morning and examine under each hive and destroy all you can find of the moth worms and millers; bits of board or shingles laid on the stands near your hives for them to collect under if carefully watched are some protection; but if they once get established in the combs or straw you may give them up. There is but one sure remedy with such hives, and that is do not use them.

A hive constructed so that millers will not enter, and still let bees pass out and in, is a thing that never had an existence only in imagination. Sweetened water set near your hives in the evening is a good trap for them, attracted by the aroma or the vapor arising from it hundreds of them will be caught by this process. It should be removed away every morning as the bees may get drowned in it.

The best remedy is, have a hive in which you can keep your stocks strong, which is done principally by preventing natural swarming, and at the same time have your hive so arranged that you can get to every part of it should they gain possession.

Various causes destroy bees in winter, or what is termed winter killing.

Loss of Queen during summer frequently occurs, and if in the old fashioned hive it is difficult to discover, and if discovered is still more difficult to remedy. Such stocks are sure to perish during winter.

Another cause is, honey when brought in from the fields is thin from a quantity of water being united with

it, and from deficient ventilation as in old hives, it remains thin and sour, is unfit for the bees, and they die in consequence.

Another cause is overswarming. In the common hive frequently the honey, from remaining there too long when too few bees have been in the hive to keep up heat enough to prevent it from graining. If such stocks throw off too many bees they often fail in collecting enough from the fields and as they make no use of candied honey, they must starve.

HOW TO PREVENT YOUNG SWARMS FROM FLYING TO THE FOREST.

That the bee is susceptible of being domesticated is beyond a doubt. The experience of the Apiculturist for more than 2000 years has established this fact, but that the instinctive desire of the bee to migrate to the forest, under certain conditions, has never been overcome, continued evidence is presented by the loss of thousands of swarms annually in this way. And unless some means are devised to stop it, it must continue until the end of time.

A knowledge of this caused me to invent my patent Regulator, by which I have perfect control of the swarm after being hived. In my hive I bring the Regulator down to the lowest gauge, giving a space of 3-16 of an inch scant by 4 1-2 inches in length, this sized entrance will let the worker bees pass out and in and will imprison the Queen; consequently they will never leave for the woods. After keeping the Regulator in this position for twelve hours, and moving the swarm immediately away from the place where they were hived, putting them on the stand where they are to remain during the

summer, always remembering to sprinkle your bees thoroughly with cold water before hiving, following the above precautions there is no danger of their leaving. The Regulator should then be brought up to the highest gauge and left so during the honey season, thus fully overcoming the evil of bees flying away to the forest in swarming time without watching them a moment.

HOW TO SAVE YOUR BEES WHEN LOSS OF QUEEN OCCURS.

If in autumn, follow directions given under October management. If in the earlier part of the season, go to a hive that has plenty of young brood, look them carefully over and see if any queen cells can be found.

These may be known by their conical shaped appearance, resembling a peanut, about an inch in length and somewhat larger at the base than at the apex. They are usually attached to the edges of the combs, but sometimes to the sides. Examine and see if any of these can be found sealed over. Take a pocket knife and cut a piece of comb out, an inch or two square, containing the cell, handling it very carefully, that you do not injure the young queen. Go immediately to the queenless colony, take out a card near the centre of the hive and near the centre of the card cut out a piece of comb and fit in the piece containing the queen cell; place the card back in the centre where it was taken from, the bees will soon cluster around and cover it.

This should be performed by an expert hand, occupying as little time as possible, that you do not subject the chrysalis, or young queen, to a temperature so low as to chill, nor the rays of a burning sun, that would destroy their vitality. Should no such cells be found, take a

piece of worker comb containing eggs, as in the other case, and proceed.

SIGNS INDICATING LOSS OF QUEEN.

In swarming time bees frequently lose their queen by some accident or deformity, that causes her to fall in the grass or weeds, and should the bees not find her they may eluster on some branch for a few moments, but will eventually go back to the parent hive again. This they will do when the queen is unable to leave the hive at the time of swarming, so it will be best to look carefully in front of your hives in the grass should your bees act as above described, as you may thero find the lost queen.

Queens frequently meet with accidents during the year that incapacitate them for the duties of the hive, or otherwise get destroyed. When this loss becomes apparent there will be great commotion in the hive; the bees will rush from one part of the hive to another out in the open air and back again, as if conseious of their situation, without a mother to perpetuate their species. When becoming fully satisfied of her loss, they settle down to a quietness not observed in thrifty colomes. And immediately commence operations to remedy the loss by constructing queen cells in different parts of the hive, sometimes starting as many as fifteen or twenty of them, and if they have worker eggs or larva of the worker kind, under three days old, they will usually succeed in their efforts. But should it be in a season when there is no drones to fertilize them, it will bo useless; but their efforts will still be continued with zeal in this respect while their exeursions to the field grow less and less.—They daily decrease in numbers, lose their energies, and the moth miller usually enters and takes possession of

the hive, and thus winds up the scene. If drones are seen around your hives late in September or during the month of October, such colonies are very apt to be queenless.— And if you have provided yourself with extra queens during the summer, they may be introduced to such stocks with a fair prospect of saving them. Old queens, if they can fly, always leave the hive with the first swarms, the young queens then soon make their appearance from the cells, and within a few days makes her amorous excursion to meet the drones on the wing in the open air. Frequently during these excursions they are lost by birds catching them. Sometimes on returning they mistake another hive for their own, and enter them, where immediate destruction awaits them. In this case should there be no other young queen present in the hive, and the bees are compelled to rear one from eggs or larva by the time the young queen could be hatched it might be so late in the season that the drones would be destroyed, and the queen remain a virgin. In this case it would be a loss of both queen and swarm. If no accident befalls them they die from old age, or become barren, and therefore useless after three or four years. There are many ways in which loss of queen may occur. I have enumerated the foregoing as being the most prominent causes, and ample provision should be made for such emergencies.

HOW THE LOSS OF BEES WILL OCCUR.

In common hives, standing out of doors during the winter, with a plenty of honey, they being of single thickness the bees will feel the sudden changes of the weather very perceptibly, which would not be the case if they were constructed in double form with a dead air space around. When the cold weather approaches they

naturally eluster closely together to keep up their animal heat, and should the cold weather last a length of time, as it very frequently does, the bees will consume all the honey in their immediate neighborhood, and then starve to death in a hive of plenty. The combs are usually very crooked and irregular, and the bees are not all of a mind to move at once, and should a few scattering bees attempt it they would get chilled and drop upon the bottom board.

At other times the breath of the bee will condense in the top part of the hive in form of frost during a long period of cold weather. I have repeatedly seen it several inches in depth, where colonies were small thus keeping them from going up amongst the combs for honey, many times starving them in this way; and when the weather moderates this frost will melt and drip over the bees as it falls to the bottom board and chills them. Should this not destroy them the freezing of the water upon the bottom board will close up the entrance and shut off all communication of air which will cause their suffocation should they not perish before. How many times has the anxious bee-master found his bees all dead in a eluster with a plenty of honey in the hive!

If a colony has lost its queen I can readily discover it by taking out each frame separate until all are looked over; if I find they have no queen I can readily give them one, or faeilities for rearing one, which they will accept.

To faeilitate the rapid evaporation of the watery particles from the honey, I have given a large or small ventilation at the will of the master which is entirely successful.

Over swarming is prevented by an artificial process known as dividing or artificial swarming, clipping out of

the queen cells, &c., as given in another part of this book. Candied honey can be removed and other put in its place in a few minutes time; the condition of your bees and honey can be ascertained at all times. If you have young stocks that have not collected honey enough for winter you can easily feed them. (See chapter on feeding.)

Stocks of bees in our northern climate should never be left out of doors during winter. But knowing that people will not or do not give their bees the care they need, I have my hive double, giving a dead air space around the entire colony, thus preventing, in a measure, the sudden changes of weather from affecting them. (See directions for wintering bees.)

To prevent robbery in the common hive. (See Bee Robbery.)

I have given some of the principal outlines of the general management of the bee in my hive, also in the common board and straw hives. The idea that you can keep bees profitably in the old style of hives, nail kegs, sap buckets, hollow logs, &c., is as reasonable as to argue that we should fall back upon the old wooden plow for farming, the pack-horse and donkey for your railroads, and a log house to live in yourselves, and a thousand other relics of by-gone days that are strewn along the path of progress for the last half century. I have one or two more suggestions to make in connection with the foregoing.

First, lay aside all traditional stories in regard to bees; as they are but memories of a superstitious past. Some think it not best to sell bees, if they do they sell their good luck with them.

If the owner dies some one must go and inform the bees of the loss or they dwindle away and die;—or that

it is natural for the bee to habit the hollow tree ;— that the bee is an insect so peculiar in its nature, that man cannot improve it or that it will never prosper where a man and wife quarrel ; and finally will never do anything only for a lucky man.

That the bee possesses instinct none will doubt. We are willing to concede to it exercise of reason, but to believe that it is cognizant of family feuds and broils, dying scenes and mourning friends, or decreasing fortunes or frowning favors, is a stretch beyond our “ fanatical ” conceptions even of the Honey Bee.

HOW TO TRANSFER BEES FROM COMMON HIVES TO MOVABLE COMB HIVES.

Which should always be done in the morning of a pleasant day in swarming time.

1st. Prepare a table or platform a few rods from the bee house or stand, then have in readiness a pail of cold water, a new hive, pans or tubs to receive the combs and honey, a wing and ball of strong cotton twine ; also a box of some kind near the size of the hive, a common half bushel will answer. A sheet and rope or a pair of leading lines will be found necessary in this operation. Should the bee-master and his assistant be inexperienced in such transfer, it would be well to make use of Protectors. The bee-master should now approach the hive with a fumigation pipe and give them one breath of smoke, with the cold water sprinkle them slightly with the hand and also sprinkle other swarms should there be any near by ; this partially subdues them which will cause most of them to enter the hive. The rope or lines should be placed upon the ground with the box or half bushel, turned bottom side down. Then set the

hive over the false hive or half bushel either square or corner ways, then fold the sheet lengthwise two or three times, and wind around where the two come together and by the use of the rope with a slip noose in one end, bind the two firmly together so the bees cannot get out, then take them to some shady place where the table, new hive, and the other fixings are prepared. Then turn the hive bottom side up, bring the false hive on the top, then drum on the old hive 25 or 30 minutes with a couple of sticks one inch in diameter, this will cause the bees to gorge themselves with honey and cluster in the box or half bushel. The sheet should then be spread upon the ground, on which place the box or false hive containing the bee, under which place a bit of stick, so as to give them plenty of air.

Then by the use of a saw (or what would be still better a honey knife) loosen the combs from one side of the hive, then with an ax split off in sections that side of the hive so the combs can be taken out as near whole as possible so they will fill the frames. The operator by the help of a long bladed honey knife should loosen the comb and lift it out and by the help of an assistant wing the few scattering bees upon the sheet near the false hive which they will readily enter. The comb should then be laid upon the table and the frame placed over it in such away that the comb will come the same side up that it formerly occupied in the old hive, and by the use of a sharp knife cut around the comb inside of the frame that they will fit them tightly, and by winding the twine around the frame both ways and tying it fast to one end of the frame; then place within the new hive and continue to do so until all the suitable combs are thus transferred, always observing to leave out all the drone comb and only put in such comb as contains young

brood; and always avoiding cutting through the young brood if it can be avoided, and if the comb contains honey put in a little of that also, to fill the frame.

When bees are transferred at the commencement of the honey season, but little honey need be put in the new hive. But if changed in the latter part of the honey season then all the honey should be given them that the frames will hold, always avoiding the putting in of old comb as much as possible, and filling up the hive with empty frames; the boxes should be placed over them bottom side up to keep the bees below.

When the bees are to be introduced if in the compound hive they should be put in the same as when hiving a new swarm and removed back to the old place and give them a very small entrance (say one inch) for a few days; and then give them a larger entrance. When the hive is first removed an old hive should be placed upon the old stand to take up the attention of the bees that may be in the field, this will prevent from the bees entering adjoining hives until the new hive is placed upon the stand.

A good degree of caution should always be observed in transferring bees. They can be transferred with proper facilities at any season of the year by a skilful operator, and have proper attention given them. May and June are the safest months in the year to transfer, as they need but little care then on the part of the bee master; with plenty of honey in the fields they soon repair their combs and fill up the hive. If the bees are not upon the outside of the hive, cold water need not be used as a good breath of smoke from the fumigation pipe will be much safer and better, rendering them perfectly harmless, until you can prepare them for the drumming process. Should they refuse to leave the combs when

well drummed, which is sometimes the case, when there is a large quantity of young brood present and abundant stores in the field, they must be fumigated occasionally during the transfer to keep them quiet, and care must be taken to wing them off each piece of comb as it is taken out, and not get them soiled with honey. If beese are transferred either befor or after the honey season, they must be watched a few days to see that other colonies do not get to robbing them. If it is done at the commencement, or during the honey season, no more honey need be put in the frames than is necessary to fill them, and save the young brood. When most of the young brood can be put in two, or three, or four frames, the remainder of the hive can be filled up with empty frames; placing three seperators between them the same as in a new hive. This will just give room for one box to shut tight over the other frames. In this case the new frames must all be put by themselves, on one side of the hive. Should the swarm be a large one (one peck of bees or over) it will be best to place a box on the side where the old combs are put; this will give them more room and it may be well to put some blocks between the supporters and the top of the outer part of the hive raising the inner part some four or five inches, until the bees can get a little regulated, then let it down. The separators may be left out for a couple of days and turn the box over them bottom side up, and then introduce separators for a week or ten days, or until the bees nearly fill the frames with comb.

A NEW MODE OF TRANSFERRING BEES.

Which I have adopted the past season I find is full better and quicker done, especially in coolish weather, than the old process just described.

The bees should be approached with water and smoke the same as in the first instance.

Should the old hive be covered with bees outside sprinkle on them about one pail of cold water, then wing them into a box or hive and turn it bottom side up on the old stand after the hive is removed ; then giving them water and smoke there will be no danger of their stings.

In this operation the hive can be removed to the place of transfer and turned bottom side up immediately; a box or hive should be placed alongside of it, or what would be still better a board or bench three or four feet in length. It should be of the exact height of the inverted hive. Then place upon it some kind of box or hive and let it project over the inverted hive about one inch to commence with.

Then with a couple of sticks pound lightly upon the sides of the inverted hive ; the bees will then commence filling themselves with honey and in two or three minutes will take up their line of march for the decoy hive, then by slipping the hive back a few inches until it is back two or three feet, under which place a bit of stick one half inch in high, this is the process when the bee-master desires to capture the Queen as she easily can be picked up while passing from the old to the decoy hive, (there is no danger of her using her sting,)

The operator should take a spider or an old tin pan with a few handfuls of cobs or sticks and start a little smudge at the commencement, and should the bees attempt to fly out of the hive while being drummed hold the smoke near by, and blow a trifle over them which will have a tendency to hurry them into the decoy hive.

A NOVEL WAY TO OBTAIN BEES CHEAP.

In sections of our country where hollow trees and large timber is scarce, the following will be found to work admirably; first get in readiness any kind of an old hive, clean it out, nail on a bottom board, giving a medium entrance for the bees. Take it some pleasant evening or just at night into the woods, and by the use of a ladder and bit of rope tie it fast near the top of some tree, in an obscure place as possible and await the swarming of your neighboring Apiaries. If you have several of those decoy hives established in the vicinity of tame bees you may calculate upon a large portion of the swarms that fly to the bush. The hives should be placed in the forest as soon as the trees leave out in the spring, and the party doing it would do well to keep the business to himself, and during the swarming season it would be advisable to look after them every two or three days; that as soon as any of them are occupied to remove them to the house for more safe keeping: by stopping up the entrance, they can be taken down and carried to the house with safety. I know a man a year or two ago in Lowell, Mass., who put out a large number of those decoy hives, and over half of them were filled with bees.

It is an old adage that there are tricks in all trades but ours, (the bee business not excepted.) Therefore I trust the reader will excuse me for any impropriety I may have committed.

WHY BEES DO NOT SWARM REGULARLY EACH YEAR.

Nature through the expression of her varied forms, as the index hand that sweeps over the concentric circles

on the dial plate of time, either directly or indirectly points us to every deviation from a common centre. These many seeming imperfections are but the radiating beams of one grand and perfect whole. To our ideas of perfection, especially in bee culture, we would have our bees gather honey from early spring until late in autumn, and were this the case, bees would swarm many times during the season. Bees increase in number remarkably fast while gathering honey. It seems that the Queen of the colony is laboring in the hive to populate it with the same assiduity that the workers are bringing honey in, from the field. But let the flow of honey cease by any sudden atmospheric changes for a number of days successively, and the colony seems to manifest a premonition of a dearth, and frequently commence "killing off" their drones at the season of the year it takes place. The cells containing young queens are destroyed, and should this happen about swarming time, it frequently checks their disposition to swarm. Hence, sudden drouths is one cause of their not swarming early in the seasons, should the drouth not continue long enough to destroy the flowers, and an increased flow of honey ensues, it will then be quite late in the season before new queen cells can be started and young queens reared.— And should a swarm issue a day or two before young queens make their appearance, it is very apt to destroy both stocks. The new swarm that leaves, seldom gathers honey enough to winter on, and the young queens are so late, and the previous destruction of drones has so far reduced the chances of fertilizing them, that virgin queens are many times the consequence of the old stocks perishing. Here is one great cause of so many bees dying in winters following late swarming. An increased flow of honey after a

drouth may be the cause of late swarms. I think the irregularity of swarming may in most cases be traced to the irregular deposition of saccharine matter in the flowers. In southern latitudes where the flowers bloom earlier in spring, and later in fall, making the season longer, bees swarm more frequently than in our northern latitudes, sudden drouths producing the same effects of checking their swarming there, as here. Thus is Divine Wisdom displayed through what man calls imperfections; but what perfection is manifest when we contemplate nature as a whole like "justice with her scales" in hand she regulates wants and supplies light and shade, cold and heat, cause and effect, in one grand unbroken chain of universal harmony throughout creation.

There may be other incidental causes why bees do not swarm regular each year, such as reduced numbers, from defective hives over swarming one season is pretty sure be followed the next season by not swarming at all, in consequence of colonies being small and illy prepared to lay up sufficient stores, barely living through the winter. A colony in this condition in the spring, with stinted stores, and also numbers, will seldom do much more than come up to a decent colony by swarming time, much less to throw off a swarm; leaving bees out on bee stands all winter exposed to the rigor of a northern climate, thereby reducing their numbers by chill, and exposure, is another cause. Colonies sometimes have queens that by reason of age or being virgin queens are not fertile, such stock cannot throw off swarms and usually dwindle away; safety lies in understanding and providing against these evils, and this is best done by the use of a moveable comb hive.

DIVIDING OR ARTIFICIAL SWARMING ADVANTAGES OF.

It is a well established FACT with our most scientific Apiarians that one great secret in bee culture is in keeping our stock STRONG. If natural swarming be allowed it is almost impossible to keep them so. Hence the importance of artificial swarming, which is full better than natural swarming, as it can be accomplished in a few minutes, at the bee-keeper's convenience, and not as the bees choose. There are many serious troubles originating from over swarming. There are also troubles and little profit where they do not swarm at all. In the Northern States, as a general thing, bees should swarm only once; if a prosperous colony and a favorable year for honey, perhaps twice would not be too much. Where bees swarm too many times, it puts the bee-master to much inconvenience, aside from the loss of many of the stocks in consequence of their being too small to resist the MOTH MILLERS, robbers, and the winter chill, flying to the forest, &c. On the other hand, how many times has the anxious bee-keeper witnessed his bees clustered by thousands upon the outside of many of his best hives in the height of the honey season, and would neither swarm nor collect honey, and perhaps many of them would remain so for nearly the whole season. The prevention of natural swarming does not prevent their increase, but on the contrary, they increase much faster if they are properly divided.

THE TIME TO DIVIDE BEES.

Is the morning in the swarming season; but should

never be practiced unless the hive be nearly full of bees, and a favorable honey season. The bee-master should always select a pleasant morning for their division. If artificial swarming is to be practiced, arrangements should be made in early Spring, when the hives are first set out. Each hive should occupy a separate bench or platform, and scattered as much as possible in the garden or field; if there are no trees to shade them, the open air will answer every purpose. The kind of benches or stands I make use of will be found described and explained in another chapter.

When a swarm is to be divided, it should first be fumigated with two or three blasts of smoke, and then slipped along to one end of the bench. Then place an empty hive by the side (looking as much as possible like the hive to be divided.) The cap and boxes should be removed, and one half of the combs taken out and transferred into the new hive. (The bees will stick to the comb.) Each hive should then be filled with the empty combs, or with frames without combs, and the boxes and caps replaced. Great care should always be observed that some of the combs in both hives contain worker eggs. This is to furnish bees with the means of rearing another Queen. Then it matters not which hive the old Queen occupies, as they will readily rear one in the hive where she is not. The Hive, in every instance before dividing, should occupy the centre of the bench, otherwise the bees would not stay in the new hive. Putting two hives in the place of one hive rather confuses them. Should any of the bees from the new hive enter the old one, probably a few of those from the old hive might make the same mistake; so it would make an even thing in the end. No fighting would take place in either hive, as the bees were formerly of the same family, and as

fast as the young bees hatch they certainly know of no other home but the hive where they are reared. To the inexperienced bee-keeper I would say, to commence with, perhaps it would be as well to allow such of the stocks as are so inclined, to swarm naturally, and those that are not so inclined, to divide them, provided that they are in condition for it; at all events, commence carefully and lightly at first.

The bee-keeper should always bear in mind that the hives thus divided should remain together for that season unless the increase of bees and great yield of honey should favor another division; if so, both hives should then be placed upon separate benches, and moved a rod or two apart preparatory to dividing. Then proceed with the hive that needs dividing the same as in the first instance.

The time the first set of boxes are removed would be a favorable opportunity to make the division, or perhaps before the bees had occupied the boxes at all. When the comb frames are introduced at the time of dividing, they should be placed on each side of the combs that contain the bees and young brood, as they would need the warmest part of the hive to bring the brood to maturity. The hive can be divided if the boxes are partially filled: it will take but a few minutes longer. The entrance to each hive should be contracted to one inch by slipping the Regulators to the right as we approach it in front. Sometimes perhaps it would be advisable to close it with-in a quarter of an inch, should they manifest any disposition to enter the other hive (a circumstance which may not often occur.)

Where artificial swarming is resorted to, the hives must look exactly alike, in form and color, or it will prove a failure. They should be looked after carefully

for a day or two, and see that the bees do not leave one hive and enter the other where the Queen may happen to be ; after a day or two there will be no trouble.

UNITING TWO OR MORE SWARMS.

Where bees are allowed to swarm naturally they frequently throw off two or three swarms, and some of these are apt to be small and are not of much value unless two or three are joined together. One good swarm is worth a half a dozen small, weak ones ; the best time to join them together is at the time of swarming, as by so doing they will be better able to collect a quantity of honey, and protect themselves against invaders. To join two or more stocks together successfully a movable comb hive is preferable, and my Compound Hive here furnishes all the advantages that is necessary in hiving bees in swarming time. Should you have a small swarm come out, hive it in the usual way ; (see directions for hiving,) and another small one the same or next day ; they may be put in the same hive without any difficulty ; but should it be a week or two between them, it will be necessary to fumigate those in the hive, before the new swarm is put in. Where two or three swarms are to be joined together in the fall, (see September management) the one containing the most combs should be selected, as the one, to which the others may be added. This hive should be supplied with full frames of combs and honey ; if possible if you have not during summer provided yourself with these, they may be taken from some of your largest swarms, and then give to the colony you took these cards from the honey that is in the hives from

which the small swarms have been driven. In adding stocks together, the small swarms should be slightly fumigated, and drummed or agitated, until they gorge themselves with honey; then by fumigating the stock they are to be added to, no fighting will occur; as stranger bees will, when filled with honey, if in considerable numbers, be accepted in almost any hive. As soon as they are joined together they should be carried into a dark cellar for two or three days; first taking off the cap and putting the preserver over them, they may then be brought out and set upon their former stand. Small or late swarms when hived, should always be set near to the colony which they are to be joined to, as they will then be more at home, and will not be as likely to attempt to enter other hives, which, should they do, would result in their destruction. The question may be asked; why not give the bees the honey from their own hives? The season is already advanced, September is late enough to unite stocks, and these stocks are young ones; such colonies are usually deficient of bee bread and were you to give them their own honey they would still be short of this and perhaps could not gather enough for their wants. By taking combs from older hives this want is supplied, and enough is still left for their use, and the honey of the other swarms and what combs can be used, should be put in the place of the old ones removed. Should there be any honey left, it may be placed in the chamber and let the bees carry it below; if enough is given them they will fill the frames with both honey and comb, which will be much better for them than the old that we have taken away. It is very difficult to add swarms together in the Fall successfully when the old kind of hives are made use of.

VALUE OF GOOD COMB FOR SURPLUS BOXES.

Few persons are aware of the great value of pieces of comb to put into surplus boxes. Bees often refuse to go into boxes, when if some pieces of comb were attached to the top of the box, then they would enter the box in twenty minutes, and go to work. Very nice pieces of comb for this purpose can be had by letting the bees build some comb on the bottom of the frames, in the space between them, and the bottom of hive. These should be trimmed off a number of times during the season, and put in the surplus boxes. All pieces of good comb during the year ought to be saved for this purpose. The whiter the better. *To put them in with,* take some bee-comb and put it upon an earthen platter, or pie tin, melt it, and at the same time lay your pieces of comb on a board where you cut them off straight with a sharp knife; then by dipping the ends quickly in the melted wax, and by having the bottom of the boxes off, and inverting the box, the comb can be easily stuck fast by placing it against the top of the box. One or two pieces in a box will do, but five or six would be better, letting them reach down as near the bottom of the boxes as possible, although a narrow strip will — answer, always inserting them crosswise of the box.

WINTERING BEES IN THE EASTERN STATES.

Here is one of the most important points in bee-keeping; yet it is sadly neglected. But few bee-keepers give much attention to their bees in summer, and fewer still ever look to, or give them any extra protection in winter, and the few that *do* differ so much in their mode of arrangements, that it is difficult to harmonize enough of their statements or experiments, to

reduce any of them to a practical system that might be followed with any prospect of success. Some succeed one winter burying their bees in the ground, while the next winter with the same course, they will lose them all. Some succeed in rooms one season, and fail the next. Some seasons bees will do quite well out of doors all winter; and then, again, there will a large quantity of them perish. The reason is quite obvious. The changes from warm to cold, in my opinion, and *vice versa*, has a great effect upon bees, and in all those conditions before spoken of, the atmospheric changes effect them more or less. If bees are buried in a light gravel or sand soil, with a moderately cold winter, with few changes, they may winter well; but in nineteen cases out of twenty the chances are against them; and the same with rooms or bee-houses. From careful experiments, I am satisfied that in our Northern and Eastern States, a more even temperature can be kept up in cellars than in any rooms or houses, or even clamps built on top of the ground. This being the case I consider a well-ventilated, cool, dark, and dry cellar, the most appropriate place for bees in winter. They should never be put in until you are satisfied the weather has become steadily cold, and the bees are done flying for the season. The cap and mat should then be removed, leaving the preserver on, tacking it fast and closing up the entrance, then carrying them into the cellar, leaving the caps off. If your cellar is cool enough, your bees will remain perfectly quiet without injury, three or four months. But should the bees, during the winter, manifest any uneasiness, which can be told by their making a continued buzzing sound and trying to get out, it is because they are too warm, and the

temperature of the cellar must be reduced so that they will remain quiet. If this cannot be done, they must be carried out of doors, but not allowed to fly unless it is warm, when they will soon become quiet, and should then be carried back. The cellar ought to be kept as cool as possible without freezing. If it cannot be kept cool enough to keep them quiet, they had better be left out of doors altogether, with such protection as you can give them. Bees seldom manifest any disposition of uneasiness, until along in February or March, when they sometimes become uneasy, and if the weather will admit of their flying, they may be taken out; let them fly a few hours to discharge the accumulated fæces, which will prevent their soiling their combs and lives, which they are quite apt to do, when shut in too long and kept too warm. Taking them out once in early spring will do; they may then be left in the cellar until the weather becomes warm enough to place them on the stands for summer. There should not be many colonies carried out at once, as they will be less likely to notice each other, and will not be as liable to attempt robbery. Sitting them out in a mild day when they can fly readily, is better than to take them out in a cool, windy day.

Where persons are negligent and persist in leaving their bees out of doors, my Compound Hives gives better protection than any others in the world, being double-walled, with a dead air-space around the entire colony, thereby securing a more even temperature than can be obtained in a single hive.

**WINTERING BEES IN THE WESTERN STATES,
WHERE CELLARS CANNOT BE HAD.**

In sections of country where underground cellars cannot be had, the next best course must be pursued. And that is, place your hives on some little elevation, where water cannot settle, putting some pieces of timber, bricks or stone under them to keep them from the ground. It depends entirely upon the season and the latitude, as to the time of putting bees into winter quarters. The climate of Vermont, perhaps, will warrant us in putting our bees into winter quarters two or three weeks earlier in the fall, and keeping them nearly the same time longer in the spring, than in some of the Western States. The bee-keeper must be governed by circumstances in this matter; when the weather becomes sufficiently cold that the bees will not be likely to fly out, is quite a safe guide to go by. After your hives are placed as above stated, then raise one side of the cap up one inch, which will make the hive shed rain, if it stands level, as it should. The bee preserver should be placed over the combs in proper order, and fastened down with small nails, to keep the rats and mice out of the hive. Then pile a quantity of loose hay or straw loosely over them. If the hive can be placed in some out-house or shed, so much the better. When wintered thus the entrance of the hive should be nearly closed and the lower ventilators left open. A shuck of corn fodder set properly around a bee-hive is a very good protection in winter.

Wintering Bees in the Northern or New England States. (See Monthly Management, under date of December.)

Bee clamps are very good in case a cellar cannot be

obtained, and should be arranged as follows: place a plank on a couple of sticks of timber, a few inches apart, in a straight line, to set the hives upon; then prepare a cover or rough of sufficient length and height to accommodate the number of hives desired, by using a couple of strips of scantling for the bottom and one for the centre and top. Then, pieces of boards three or four feet in length should be nailed to them, and pieces of scantling, five or six feet in length, placed at the bottom, every eight or ten feet, to stiffen the rough, so it can be handled without injury. When this clamp is placed over the hives, then dirt, to the depth of eight or ten inches, should be thrown over it. In this case, a small entrance should be given the bees, and the preserver should be placed over each hive, fastened on, and one side of the cap raised up one inch to let the dampness pass out, to prevent mould from accumulating in the hive, or carbonic acid *gas*, which is so detrimental to bees while in winter quarters. This system is very objectionable where a cellar can be had, where the same temperature can be had, and at the same time the bees will be accessible, should they need any care during the winter.

Clamps, constructed as above and covered with straw instead of dirt, I would recommend, either East or West, in the absence of a cellar. Should the snow drift over the clamps, the bees will not suffer in the least. When bees are thus wintered they should be taken out as early in the spring as the weather will permit of their flying from their hives with safety.

WINTERING BEES IN THE MIDDLE AND SOUTHERN STATES.

Where my Compound Hives are used, they may be left with safety on the stands from year to year, by

closing all the ventilators and contracting the entrance of the hive to one inch or less during the winter season.

SEPTEMBER MANAGEMENT OF BEES IN KIDDER'S COMPOUND HIVE.

To reduce bee-keeping to a practicable system of management, I have adopted the following plan or arrangement: to divide it into twelve distinct sections or chapters, representing each month in the year, thus forming a complete "Bee-keepers' Almanac," commencing with September and telling how to manage your bees each month in the year.

In the month of September the honey season is usually drawing to a close, and it is necessary to attend to your bees for the coming winter. For this purpose you should supply yourself with a fumigation pipe and some tobacco, to fumigate your bees with. First fumigate your bees by blowing a little smoke in at the entrance of your hive, waiting a moment or two, and then removing the cap; should there be any bees present in the boxes, blow a little smoke in at the top of the box. If the gauze should be waxed over, it may be picked out with the point of a knife or pin. By blowing in a little smoke the bees will readily go down into the body part of the hive; this done, the surplus honey boxes may now be removed; then commence on one side of the hive, and, with a pocket-knife, loosen one of the frames; remove it from the hive, look it carefully over and see if it is well stored with honey and bee-bread; see if there is any young brood or eggs present. This can easily be done by gently pushing the bees aside with the fingers. Examine all the combs in this way. If plenty of honey, bee-bread, young bees or

eggs are found, and a good quantity of bees, place the whole back in the same order that you found them; clean out the outer part of the hive; put on the preserver, and over that place the straw mat, and put on the cap; contract the entrance of the hive to one inch or less, so that but a few bees can pass out and in at a time. By slipping the regulator to the right an entrance of a fourth of an inch or a whole inch, can be given, as occasion may require.

If the colony is small, move the regulator to the right far enough to make it quite small, say one-half inch, as they can better protect themselves against intruders. Should you not discover any young bees or eggs, you must look each card carefully over and see if you can find the queen; this can be done at the same time that you are making examinations in reference to the other conditions of the hive. If no eggs, young bees, or queen can be found, you must give them a queen as soon as convenient. Such a colony as this would be a good colony to introduce an Italian queen into, and a very good season of the year to do so, and have them become Italianized early the next season. Every bee-master should, during the season of drones, rear a few surplus queens for such emergencies as this. In ordinary winters, a pound of honey will winter about one thousand bees, or half a pint in measure. An estimate made from this will be quite safe, where my instructions are followed in regard to wintering. Should there be a deficiency of honey, it must be supplied immediately, in order to have them carry it into the hive and seal it over before the weather becomes too cold. (See Directions for Feeding.) In this case, the preserver and mat should be left off

during the process of feeding ; the feed should always be placed in some suitable dish in the chamber of the hive, as the bees will then carry it below, and no other swarm will know anything about it.

Should the swarm be a young one, perhaps they may be deficient in bee-bread, as this is frequently the case with young swarms ; then it would be best to select a eard from some older swarm that had a plenty, and change ; thus you will be able to equalize *honey* and *bee-bread* throughout the different hives in your Apiary, by changing the combs of the different hives ; the ventilation of the hives must now be closed. If you have any small swarms, two or more of them may now be added together, as September is the most appropriate time for this operation, should it not have been done previously. (See under head of Uuiting Swarms.)

SEPTEMBER MANAGEMENT IN THE COMMON BOARD OR STRAW HIVES.

Little can be done for your bees in such hives. If you have surplus honey boxes you may remove them, and keep an occasional watch that they do not rob each other. Any young stoeks that are deficient in honey should now be fed, so they will have time, while it is warm, to seal it over in the eells before the weather gets too cold.

And to those that wish to follow the brimstone theory, this month is the best time for operations. It is usually performed by digging a hole in the ground, a little smaller than a hive, about a foot deep ; tie a rag to a stick and dip it in melted brimstone. Light this and set the hive over it, stopping all the cracks tight, to give your bees and honey all the benefit of the brim-

stone. Let it remain until your bees are dead, and you will have accomplished the September management.

OCTOBER MANAGEMENT.

The honey season may now be considered closed, as buckwheat, the last honey-producing crop of any note, is usually out of blossom, and bees seldom gather any honey except from transient flowers after this. If you have neglected the September management, you must now put it off no longer. Small swarms must now be joined together, if done at all. If all the stocks are in movable comb hives it is not a difficult task, as they may be well fumigated and then winged together; first capturing the queens and caging them, that you can have them in case any accident should befall those remaining, in the colonies joined together, which may be ascertained in a few days. If you have queenless colonies, these may be joined to smaller colonies that have queens, unless you have surplus queens to supply them with. These colonies that have been joined together must now have honey enough given them to carry them through until spring flowers make their appearance. Your estimate of the quantity of honey you will probably need may be made from the rule laid down in the September management, and will be found to prove sufficient in ordinary cases. The frames containing the honey from those hives you have taken the bees from, may be placed in the chamber of the hive, one at a time, laying some little pieces of wood between the tops of the frames and the one you put in the chamber, that the bees can have a chance to run over the whole surface of the comb; then by scratching

the caps off a little with a fork, the bees will carry down the honey from a number of different cards in a single day, if attended to and replaced as fast as emptied. The entrance of the hives must be contracted to an inch or less, to prevent robbery, and ventilation generally closed. They should be set down cellar for a day or two, if practicable.

Where bees are to remain out of doors, I would recommend that each comb be perforated with a small-sized hole, one inch in diameter, down from the top some two or three inches, near the central portion of the frame; this will give the bees a chance to pass from one comb to another, and give them free access to their stores, and prevent their starving, as they now frequently do, when this is not done. Frames containing honey can be sometimes selected from other full hives, in emergencies of this kind.

NOVEMBER MANAGEMENT.

If you have fulfilled your duties in September and October, little need be done this month more than to keep a little look-out that they do not get to robbing in pleasant days.

DECEMBER MANAGEMENT.

The management of bees this month will vary according to localities. The Eastern States, Canadas, New York, Pennsylvania, Ohio, and the Western States vary somewhat in climate, and no definite time can be selected, for which to place your bees in winter quarters. Whenever the weather becomes cold and is likely to remain so; in whatever location you *are*, your bees should now be put in winter quarters. If you

have a cool, dark cellar, (a dry one is best, but a damp one is better than out of doors,) prepare a platform or shelf, some eight or ten inches in height from the bottom of the cellar, on which to sit your hives. Then, as you carry them in, close the entrance so that the bees will not escape while you are carrying them *in*; after placing them on the shelf remove the cap, and leave it off, also the straw mat, as this will not be wanted unless the cellar is cold enough to freeze; then it may be placed over them, covering the top within an inch or two, until the air becomes more mild; then it should be removed to give a chance for all dampness to escape.

The hives may be placed side by side, until the shelf is filled, and should you desire more room they may be arranged over these, at a proper distance that will give you a good chance to see to those that are in the lower tier. Should the bees at any time appear agitated, which can be known by their making a loud buzzing noise, this is an indication that your bees are too warm; and if you cannot reduce the temperature of the cellar, your bees ought to be carried out into the cool air, where they will immediately quiet down, they may be carried back and when they get still, arranged as before.

Well ventilated cellars are much better than those without ventilation, either damp or dry. A very good way to ventilate a cellar, is to construct a small chimney of boards, giving a throat of two by four or five inches; this may be placed against the end, or side of the house, and fastened. It should reach an elevation a foot or so above the roof where it comes up against it, and the lower end be connected with a suitable box or tube placed in the cellar window, or an orifice made on purpose to receive it. This box or tube

should be made with the throat or aperture considerably larger in the cellar, than outside where the chimney comes into it; this will have a tendency to create a draft. Such a chimney may be made ornamental, and painted, and would not disfigure any dwelling if placed in a proper place, and would well compensate every individual that had a cellar for the benefit of vegetables, and purifying the atmosphere. I have recommended the above plan many times during my entertainments, and have heard many favorable reports from parties that have adopted it, and are highly gratified with its effects. Where it is convenient this ventilating tube might be introduced into the chimney; in this case a tin tube such as is used for conducting water from eve-troughs into cisterns might be used; and, if preferred, might be put up outside the building in the place of the one made of boards.

JANUARY MANAGEMENT.

Little need be done this month more than to see that they remain quiet.

FEBRUARY MANAGEMENT.

About the same as January, keeping a good watch that they are all right. Should any of them appear noisy at any time, you may know they are too warm. If they are kept cool they will remain perfectly quiet.

By this time, if you have not during the month of January, you should prepare yourself for the coming season, with hives. Where parties design manufacturing their own hives, they should send in their orders for fixtures, as I furnish them much cheaper than parties can manufacture them. Hives, also, ready-made or

unmade, all cut ready to put together, are furnished much cheaper than can be made by hand; and parties living at a distance will favor me, as well as themselves, by sending in their orders in season, as they will then receive their goods in time, and the freight will be less than if sent in spring or summer.

MARCH MANAGEMENT.

Your bees have now been in the cellar three months or more, and if the cellar has been kept cool your bees have consumed but very little honey; but if they have been uneasy by spells they have probably consumed double the quantity they probably would, if they had remained quiet. As the snows of winter fade away, some sections of the country are favored with spring weather this month. It must now be in setting your bees out, as in fall in putting them in winter quarters. Where bees manifest the least uneasiness, if the weather is favorable, they may be brought out of the cellar; let them fly and discharge their feces which they have retained for three or four months. It will prevent them from soiling the combs and hive. Bees will remain quiet for months, if kept where it is cool and dark, but if too warm they will appear agitated, and keep up a loud buzzing sound, and if not placed where it is cooler they will consume a large amount of honey; and in consequence will discharge their excrements in the hive,—soiling themselves and combs, causing the destruction of the swarm, if not attended to immediately. Should this occur it is best to let them fly two or three hours, and when they all get quieted down, they may then be placed back into the cellar until the weather becomes warm enough to set them out on the stands for summer.

APRIL MANAGEMENT.

Spring is now moving gently upon us ; occasional sunny days, with a mild atmosphere are unloosening the ice-bound girdle that has held in check the teeming millions of the insect world that have during the long night of repose been imprisoned by the frosts of winter.

The chilling blasts that still mingle with the pleasant days, remind us that constant care is necessary at this season of the year if we meet with success, for now, more than ever, your bees need close attention. They must be brought from the cellar as soon as the weather will permit, placing your hive and bench as near as possible where they were the year before, for their memory of the past season is here particularly manifest. If placed a few rods away from the spot where they were the year before, they will be seen visiting their old stand by hundreds, for a number of days. If bees are placed in the same yard where they were the year before, occupying a different position, many of them will, when let out, go to the old stand, and should another colony be there, they will attempt to enter the hive, and fighting and perhaps robbery will be the consequence. When bees are first carried from the cellar and put upon the stands, the inner portion of the hive should be lifted from the outer, and all dead bees and filth cleaned from the hive, and then placed back again until the weather becomes warm enough to take out the frames separately and clean them off, without chilling the brood. May will be a good time for this. Always choose some fine day to carry your bees from the cellar, first placing your mat over the preserver and placing the cap on ; raise the

regulator and give them a full entrance for two or three hours, during which time they will take a good airing, and then the regulator may be brought down to the gauge, giving them about an inch in the lower left hand corner of the regulator. A few swarms set out at a time will be better than many, as they will be less likely to rob. The hive should tip forward a little to prevent the water running back into it from the entrance. Care must now be observed in regard to their having plenty of honey; it is supposed that enough was given them in September or October to last them into May, but for fear it was not done, they had better be looked over and see if they are brooding, and have plenty of honey, &c. Should they need honey, if you have any in frames, these may be put in the place of those that they have taken the honey from; and such combs may be saved until swarming time and put into hives with young swarms, saving them the honey and trouble of building new combs. If you have no such combs, then feed in a dish containing comb, over which turn liquid honey. If honey is lacking the syrup of the sugar maple is a very good substitute; that made from the first run of sap is best; pure sugar candy, without scenting or coloring, is very good, and in fact it is next to sealed honey. In feeding bees while in winter quarters, cane syrups are not safe; a medium grade of cane sugar made into a syrup by adding a little water, boiling and skimming it, will do very well. Should there be a deficiency of bee-bread, this may be supplied by placing in a small dish in the chamber, some rye meal or buckwheat flour, and they will quickly carry it below. As soon as the willows, the elms or soft maples put forth their buds they will

gather enough bee-bread from these, and will need no more care in that respect.

During this month and May, salt should be occasionally put either on the bee-stands or on some loose boards in different parts of the yard. Bees are great lovers of salt and it is believed to promote their general health.

April Management in the Box or Straw Hives.—Where they have been put into the cellar they may be treated through the winter and spring months about the same as bees in my hives; should they get short of honey, some comb filled with it may be laid on the top of their combs while in the cellar, (the hives being bottom side up,) and they will soon carry it below. This should never occur; *always avoid feeding bees in winter*, if possible. If feeding must be done, let it be done in the fall. Your bees in the old style of hives should be brought out and placed on the stands at the same time as those in my style of hives, and for a few weeks you should go occasionally and turn them up, and brush all the filth from under them, keeping a good watch that they do not go to robbing. Should they do so, you ought to have the entrance of your hives fitted to use my *Patent Regulator*, as they easily can be, and give them a small entrance. The use of this alone, even where the old-fashioned hive is made use of, is worth much more than I ask for the right to use my *hive and all my improvements*.

MAY MANAGEMENT.

The colonies having all been arranged on the first of April, little need be done at this time. The soft maple is now in full bloom and yields a fair quantity and

quality of honey ; the willows and alders also furnish some. In sections where these abound, bees will usually collect what honey they consume at this season. About the middle of this month the peach, the apple, pear, currant, &c., begin to blossom and furnish a fair quantity of honey while they last, but their duration is too short to any more than help them along for the present. The dandelion soon makes its appearance and is a rich treat for both honey and pollen. If you have any transfers to make, now is the time to do it ; or if you have neglected the previous year to use the comb separators you may have a large amount of drone combs in your hives ; if such should be the case, it is time that you rid your hives of it, and thus prevent an excess of these non-producers, but great consumers of the contents of the hive. This may be done by taking a pocket knife and cutting out the drone comb ; in doing this cut back to the worker cells, and then the bees will be more likely to rebuild worker-combs in its place. A single hive is enough, unless the apiary is large, when perhaps two or three may be left to rear drones from. In sections of country where many bees are kept, and no attention is paid to them by other parties, you need not rear any, as there will be plenty of them on the wing to meet the young queens. Old combs that are unfit for use may now be taken away and empty frames put in their places, the preserver and mat removed, and the general condition of the hive improved. First take a honey knife and scrape the tops of the frames off as they hang in the hive. This may be done by taking hold of the handle with one hand and the point with the other, and scraping them off in a body. Then take them out singly

and wing off all the bees into the hive, and scrape the frames where any filth may have soiled them, putting them back in their places as the others are removed, that the bees may eluster upon them and cover the young brood. After the frames are all eleaned, then lift the inner part from the outer, and clean out all the scrapings of comb and dirt, and give the interior of the hive a clean, nice appearance, for it is now about the first of June, and we must expect in a few days they will be as busy as bees.

JUNE MANAGEMENT.

In some portions of the country, the rules laid down for May will apply to April, and April to Mareh, &c. Each section must be governed by the temperature that controls it, and these rules will be appliceable in their season; taking the time I have given for a medium. White clover, the great base of our honey product, now begins to make its appearance. The surplus honey boxes should be put on now, remembering to use all the empty combs you have in supplying honey boxes.

During this month and July, some very nice pieccs of comb for putting into honey boxes may be had by removing the bridge,—should it be in use,—and letting the bees build comb on the under part of the frames. Cut this off every week or two, and put it in the honey boxes, and it will aid very much in inducing the bees to enter the boxes; and if you have plenty to fill the boxes, it will be poliey to do so, as it will save them much labor and considerable honey; for every pound of comb they have to build, costs the owner at least twenty pounds of honey.

As soon as the white clover gets well in blossom, the the regulator should be raised up, giving a full-sized entrance; a suitable ventilation now should be given them, remembering that all honey, as the bees gather it from the flowers, has more or less water in it, which ought to be evaporated before the bees seal it over. A well ventilated hive assists them much in this respect. Winters, and springs following a wet season, bees are very apt to die in great numbers; and in the majority of cases it is traceable to honey that has been soured in the cells, in consequence of being sealed over before the water is evaporated. Such honey will produce dysentery, and frequently death, to whole colonies.

Where artificial swarming is resorted to, this month, in some localities and seasons, is a suitable time. This will depend entirely upon the condition of the swarm, and the amount of honey the flowers are yielding, with a fair prospect of future stores. (See Artificial Swarming.) Where bees are allowed to swarm naturally, they must be watched occasionally during the middle of the day, as they usually swarm between the hours of ten and three. Hives should always be in readiness at this season of the year, for you may want them at any time. A loose board cover, large enough to project five or six inches over the top of the hive all round, will give ample protection, and is better than any bee-house ever invented. These covers should be placed over them when first placed out in the spring; a small block of wood, or something to give an elevation to the front part of the cover, so that the water will run off the back part of the hive, will be advisable. This will also protect them against the hot sun, and, taken in connection with a good hive, is the best bee-house in the world, the shade of a tree excepted.

flowers one season may shorten their stores so much that during the winter and spring they would starve if they were not fed. Sometimes the covetous owner, against his own interest, takes too much of their surplus stores from them in the fall. There are many ways that colonies get short of stores and need to be supplied until they can gather honey from the fields.

Whatever is fed should be placed in the chamber of the hive. A piece of empty comb to hold the honey or syrup is best of anything, as bees will not get besmeared with or drowned by getting into it. This may be placed in a low tin or earthen dish,—a common dining plate or tin pie plate will answer every purpose,—then pour the honey or syrup over the top side of the comb, and the bees will immediately carry it below. If it is in the fall, enough should be given to last them until the spring blossoms make their appearance, as it is a bad policy to be feeding them a little at a time during the winter. By placing it in the chamber of the hive there will be no danger of exciting other bees to robbery. If you have to feed in the spring and cannot get good honey, the syrup of the sugar maple is very good; and that made first is best, as it is least likely to sour or produce dysentery. *Pure sugar candy*, without scenting or coloring, is also first-rate. It should be put down between the combs, a few sticks at a time. If Southern honey is fed, it should always be brought to a boiling heat and skimmed before using, as it frequently contains deleterious qualities, and boiling purifies it. Candied honey may also be used by mixing a small quantity of water with it, and bringing it to a boiling point. Bees cannot eat candied or grained honey, as they cannot swallow the granulated particles. It does

not injure bees, as some suppose. It has often been the case that bees have starved to death with a plenty of candied honey in the hive.

Honey in the comb is preferable to anything else, if it can be obtained by scratching off the caps slightly with a fork and piling it up on a plate or board, a few pounds at a time, in the air chamber of the hive, away from other bees, where it is warm.

Persons using the Kidder hive will have but little trouble in feeding bees, as the frames filled with honey can be readily taken from the full hive and introduced to the one that needs feeding. In fact, it is the only practicable way to feed in cold weather, as all my comb-frames fit my different hives, and can be changed when desired.

FEEDING BEES IN OLD-FASHIONED HIVES.

When this is done, the lower part of the combs should be cut out so as to admit a dish large enough to hold the feed and comb containing it. The entrance of the hive should be made small to prevent other bees from robbing it. It is the height of folly to set honey around in dishes promiscuously in an apiary; it is a sure invitation for robbers, and is usually accepted. To those that still cling to the old-fashioned hive, I would say, that my Patent Regulator and Bee-Catcher can be attached to any kind of hive in a few minutes, and the use of these to prevent swarms from going off to the woods when first hived, and to guard against robbery at other seasons of the year,—with perfect control of the entrance at all times,—is worth five times the price of an Individual Right, if you have many bees, even in a single season.

For further particulars about feeding, see Monthly Management.

SUBSTITUTES FOR POLLEN, FARINA, OR BEE-BREAD.

Young swarms frequently fail of storing a sufficient quantity of *bee-bread* the first season, as they usually swarm at a time when there is plenty of honey in the flowers, and they will always gather honey in preference to pollen, when the two exist in the same flower. The gathering of bee-bread is usually put off as long as honey can be gathered, excepting for immediate wants; and frequently when the honey has been quite plenty a large portion of the combs is filled with it, leaving but a small portion of the combs empty for rearing young bees and storing bee-bread. Consequently, but little is stored in the fall; and before it can be obtained the coming spring many of these swarms will suffer for the want of it; and to supply this, rye meal, or buckwheat flour, placed in the chamber of the hive in small quantities, will answer as a substitute. When this is done, some water placed in a saucer with a handful of pebbles, to keep the bees from getting drowned, must also be placed in the chamber, a little at a time, some fresh being turned in every day or two,—this will assist them much in early breeding.

Old swarms seldom need this attention, but if you have a movable comb hive you can readily ascertain any want of your bees; and with a suitable chamber they can be fed at any time, and no other swarms will know anything about it.

AMOUNT OF BEES THAT CONSTITUTE A SWARM.

There are three classes of bees that inhabit a hive,—the queen, drone and worker,—though it is not necessary that the whole three classes should always be present in order to have a swarm. A queen with a handful of workers is properly a swarm; if there is twenty or thirty thousand, or even sixty thousand present, it is but a swarm.

The following table of the average number, measure and weight, is taken from Key's Treatise. This table is not far from correct. It is very necessary to take into account the state of the bees at the time when the calculation is made. If they are alive, they weigh less than when dead, and also if weighed immediately after they have emigrated from the mother hive, as they are then loaded down with honey and farina, and will weigh more. This calculation was made when the bees were in their natural state, alive. This will allow the apian to make a pretty close calculation upon the number of bees his hives contain, when he sees them in clusters or heaps.

(Dry measure is here made use of.)

15,000 bees constitute a medium swarm.

25,000 bees constitute a good swarm.

35,000 bees constitute a large swarm.

I have seen in some colonies, just before swarming, forty, fifty and even sixty thousand.

	lbs.	oz.	pwt.
100 drones weigh . . .	0	1	0
290 workers weigh . . .	0	1	0
4,640 workers weigh . . .	1	0	0
450 (about one gill,) . . .	0	1	10
1,830 workers, (a pint in measure,) .	0	6	5
3,660 workers, (a quart in measure,) .	0	12	10

Should this calculation be made upon bees when gorged with honey, it would make a difference probably of one-third in weight. The weight of a first new swarm, when first thrown off, varies from six to twelve pounds, according to the conditions of the combs in the parent hive as well as the size of hive, &c.

The *amount of honey to winter a swarm* is usually one pound of honey to a thousand bees.

QUEEN OR MOTHER BEE, OR WHAT THE ANCIENTS CALLED THE KING BEE.

In form she is long and apparently slender, compared with the drone, though a trifle larger around the thorax than the worker; is usually of a dark color, except the abdomen; this is lighter. Her wings are short, reaching but little more than half way back. Her posterior is more pointed and has the appearance of curving under more than that of the workers. She is rather shy; generally tries to hide away amongst the bees and combs whenever exposed to view. She has a sting, but never uses it except in combat with a rival queen. This singular anomaly in insect life has given rise to much speculation and deep study in relation to this particular type or class, (*apis mellifica*.) Unlike a large portion of the insect world, the bee is forced to live in groups or families for mutual protection as well as for a continuation of the species. Individually, or independently of each other, the different bees of a colony would soon perish. Like the drone, the queen never goes to the fields to gather honey. Her office is to lay the eggs, both male and female, to populate the hive. Without her the colony must soon perish, yet she is as dependent upon the workers as they are upon

her, and both are equally dependent upon the drones, notwithstanding they are the acknowledged idlers of the hive. Their mutual dependencies is the foundation of centralization, and the queen seems to be the acknowledged head. She always, unless crippled by accident, leaves with the first swarm thrown off. Should this not be the case the swarm will immediately return to the parent hive again. At certain seasons of the year she is very prolific, laying at the rate of two or three thousand eggs per day. These eggs are usually deposited near the centre of the hive, and as the bees increase in numbers, she makes to the outer part of the combs; frequently, in well populated hives, the young may be found at the extreme edges, as they have plenty of bees to cover them. Queens are reared from eggs that would, if deposited in worker cells, produce worker bees. By giving the larva of such eggs proper capacity of cell and royal jelly, (a substance that is said to be prepared from honey and bee-bread, and is found only in royal cells,) a perfect female is developed. She is hatched from the egg in about sixteen days, from the time it is laid. She pairs with the drone but once in her life, usually within eight days after birth, and in the open air. According to Huber, she must pair within twenty days or she cannot be fertilized at all. She remains fertile about three or four years, but should not be trusted more than three, as retarded impregnation is evident from the fact, that after three or four years most of her progeny will be drones. She has been known to live five years; is in embryo the shortest time and lives the longest of any bee in the hive.

WHY ONE COLONY OF BEES DOES NOT DO AS WELL AS ANOTHER, ALL CONDITIONS BEING APPARENTLY EQUAL, WHEN STANDING IN THE SAME YARD OR EVEN ON THE SAME STANDS.

This question has been frequently asked and has given rise to more thorough investigations in relation to this point. When bees first issue from the hive in spring, instinct prompts them to search for honey. If any deposit is found by a single bee, the members of its colony is informed of the fact, and they are brought into requisition, if the amount requires their aid. This course is always pursued by the bees, and if a bee should visit a field in one direction and find flowers that yielded even a moderate quantity of honey, the inmates of its hive would be very apt to visit the same fields, so long as there is honey to be found there, while the bees from another colony may, under similar circumstances, be visiting a field in an opposite direction where an abundance of honey may be gathered; consequently this colony would gather much more than the other. Sometimes, from all outward appearances, the colonies may be alike, when a real difference exists in the age of the queens; and with the difference would be a corresponding fertility of the two. The younger, being the most prolific, would people her hive much the fastest, the result being a greater number of bees to gather honey. It is highly important that a register of the queens and their ages be kept by the bee-master, and the lives numbered; then old queens can be known and destroyed, and young ones put in their places and remedy the foregoing evils.

THE DRONE, OR MALE BEE.

The drones, or male bees of the colony, are usually hatched in moderately small numbers, compared with

the workers, from about the first of May until in August or first of September, and appear to be the gentry of the hive. They do not labor; never gather any honey from the flowers—indeed they could not if they would, not being provided with a proboscis like the worker bee, by which they could reach the honey in the flower. They have no baskets on their legs in which to pack and carry pollen, and they are destitute of a sting. Their only office is to fertilize the young queens. They are tolerated in the hives until September or October, unless the supply of honey is deficient; when that is the case, if it should last three or four days, or a week, an indiscriminate slaughter of the drones takes place. But immediately on the appearance of honey in the flowers again, they cease their murderous assault; then things move smoothly along until September, when they are usually destroyed, unless some of the colonies are queenless; in this case the drones are undisturbed, and left to perish with age or dwindle away with the unfortunate colony. They are much the largest bees in the hive, and usually make their excursions from the hive in the middle of the day; they make a loud, buzzing noise while flying in a still, warm day, when thousands of them are on the wing; the sound they create very much resembles that made by bees swarming. They are usually hatched in about twenty-three days from the time the egg is deposited in the cell, and are short-lived, usually living three or four months, unless the workers destroy them sooner.

**KILLING OFF THE DRONES BY THE USE OF THE
PATENT REGULATOR AND BEE-CATCHER.**

From the great amount of drones that is reared in some colonies, it is often necessary to rid the hives of

them, to save the swarm from destruction. It is always best to know the condition of the colony before attempting to destroy them. If there should be quite a quantity of young brood in the hive at the time, and but few worker bees, it would expose the young brood too much to destroy all of them at once. They assist in keeping up the animal heat, and stick very closely to the combs, except in the middle of the day, when they fly out a few hours. Old queens lay more drone eggs than young ones; therefore they should be destroyed and young ones substituted in their stead. All drone comb should be cut out in the spring to avoid rearing them; then their places will be occupied by workers, which will be much better for the bees, and their owner.

DESCRIPTION OF WORKER BEES.

These constitute the majority of the population of the hive; their duties are to gather honey, elaborate wax, make combs, gather the antheral dust from the flowers for bee-bread, collect propolis from the resinous trees and plants, with which they cement the interior of the hives, fill up the cracks and crevices to protect them from insects and excessive moisture; to hatch and nurse the young; to defend and protect their hive and stores. In truth they merit the title "*worker bees*," for they are models of industry indeed. They are developed from the egg in about twenty-one days, and are imperfect females, and live about one year at longest, depending upon circumstances. If hatched in the height of the honey season they are quite short-lived, on account of the excessive labor they are subject to, many of them not lasting more than a month or two, and but few passing six months.

They are smaller than either the queen or drone, very sprightly in their movements; they are armed with a sting, which they use as a weapon of defence; this sting is barbed, and when inserted to a slight depth the bee is unable to withdraw it, and in attempting to do so tears it forcibly from themselves, which proves their destruction in a few hours.

BEE-HOUSES OBJECTIONABLE.

In every sense of the word, bee-houses are objectionable. They afford better habitations for millers, spiders, ants, &c., than they do protection to your bees. The best bee-house in the world is a *good hive*, and the *shade of a tree*, or a loose board placed over your hive to protect it from sun and storm. These covers should project over the top of the hive some five or six inches all around. A large stone or block of wood may be laid on the cover to hold it in its place, to prevent the wind from blowing it off.

LANGUAGE OF THE BEE.

The bee possesses a language, at least peculiar to itself. The inarticulate sounds of the bee, which are instinctively uttered, are readily understood by its own species. The expression of ideas by articulate sounds for the communication of thoughts, is but the acknowledging of those sounds as representatives of our ideas. Then properly speaking the conveyance of ideas from one to another, either by sounds or gesture, becomes language so soon as those ideas are understood between two individuals. Were it not so, the mute would be as isolated from associations of man, as the insect world. That man actually holds converse with the bee, receives

and transmits ideas, is as true as that these are received and transmitted to and from the mute. For a few moments go with me to the bee-hive, and see if I can converse with them. A gentle tap on the outside of the hive,—every bee with a short, buzzing noise answers from within,—all at home. This idea they have conveyed to me. A little harder rap conveys the idea to them that something more is wanted outside; and immediately some of them make their appearance at the entrance of the hives, and fly around. This actually conveys the idea to me, Who is here? That they simply take this way to say, Who is here, and what will you have? I remark, I want some honey. The bee not understanding the sounds necessary to convey the idea to them, I attempt to approach the hive for this purpose; they immediately catch the idea and answer by a sharp, shrill, humming sound, You can't have it—stand back Mr.—I shall defend my home. I get a faint impression that they are becoming a little irritable, or a little too free with their threat; I bring my hand up as though I said, Don't get in my face. The bees immediately answer, I have the same right to your face, that you have to my honey, and suiting their actions to the ideas they wish to convey, they slip a dozen or two of ideas into my face and eyes from the end of their stings. I now understand, I have exchanged thoughts by actions with the bee, and am very sure that if I can't talk to them, their language is perfectly intelligible to me, just as much so as though words had been exchanged. Let a bee find sweet in any place, how soon he brings the inmates of his hive to assist in carrying it to his home. In swarming time, if the queen cannot leave the hive with them, how soon tho bees that have left become

acquainted with the fact, and return to the parent hive again. Take the queen from a colony, and how soon the whole swarm becomes acquainted with the loss. Give a queen to a colony that is queenless, and how soon a manifestation of pleasure and activity will be seen about the hive. As if by common consent, they change their former course of procedure; whereas, they were continually constructing queen-cells, they now as rapidly destroy them, and commence to carry in pollen in anticipation of the wants of the young bees that are soon to be added to their numbers. From every appearance it is certain the bees possess a language by which they readily communicate with each other. They project and carry out certain labors according to conditions, with a fidelity of united action that would do credit to intelligent beings.

BEES-WAX—ITS VALUE AND ELABORATION OF.



Fig. 2.

Figure 2 represents the body portion of the bee, showing more particularly the abdomen, and the manner of manipulating wax, which accumulates on the abdomen of the bee, in little fine scales, as shown in the figure.

Wax can hardly be overestimated, costing from twenty to twenty-five pounds of honey for a single pound of comb.

The elaboration of wax is performed by the bees consuming saccharine matter in sufficient quantities to cause an exudation at the will of the insect, of minute scales from the abdomen of the bee, which is composed of a series of bands or rings, between which the wax appears in minute scales. Thousands of these little

scales may be found on the bottom board of a hive, a short time after a new swarm is put in, appearing to the casual observer a whitish dust.

When building their combs upon the glass walls of a hive (which is sometimes done,) the bees may be seen reaching their fore legs or arms back under the abdomen; at the same time the hind legs are brought forward as if in the act of scraping themselves; then placing their feet or hands to their mouths, giving them a rotary motion, as if kneading something with their mouths and hands; then placing the mouth to the edge of the cell already in construction, and lifting the head up as if trying to extend the edge of the cell; during these efforts with the head, the edges of the cell are continually manipulated with the fore feet. These motions are continued for a short time, when it will be seen that the cell has already increased in depth. Wax may be elaborated from all saccharine substances, that bees will live upon. It varies in color from a dark yellow to almost a pure white. For marketing purposes, a bright yellow commands the highest price, this being considered the standard color—that which is darker being considered of an inferior quality; while pure white wax, is only obtained by bleaching, which of course enhances the market value of it. Wax may be considered one of those productions of which nature abounds, but only deals out to man through her own peculiar channels.

Some varieties of trees, such as haberry or wax myrtle (*myrica cerifera latifolia*), of Connecticut, New Jersey, Pennsylvania, and Virginia, yield wax from their berries quite abundantly, but of an inferior quality. The finest wax is treasured in the floral world, the

leaves of which, in their shining surfaces, speak of the waxen varnish with which nature's pencilled rays has touched these blooming beauties, and must forever have been beyond our reach, had it not been for the little *chemist*, the bee, whose active industry and peculiar organization fits it to become a channel through which each opening flower yields its silent offering as a penance for bathing in the morning dews.

Wax forms an article of commerce of no inconsiderable value. The exports of this article alone from the island of Cuba, has reached the enormous sum of \$500,000 in a single year. Some countries import, while others export large quantities of it. It is extensively used in the religious ceremonies of different countries where the Roman Catholic religion prevails. It is used largely in this country for candles, different preparations of plasters, salves, ointments, and various chemical preparations; and more recently has been made into wax flowers, many of them displaying taste and beauty that do credit to the fair hands that mould them; but so far fall short of the real, that no bee has ever yet been known to sip nectar from their cups.

HONEY-PRODUCING PLANTS AND TREES.

Connected with the cultivation of the bee, it is essential that we understand the true conditions that most favor its prosperity; that these may be known, and in a great degree perfected by the hand of man, we are quite certain. Who would think of going to the forest, to sow and reap the "golden harvest," until the woodman's axe had felled the giant oaks; and the virgin soil had polished the ploughman's steel? Do you gather the apple from the beech? or the pear, or plum,

from the willow, or the oak? or do you comply with the requisitions that the laws of nature enjoin upon you to obtain them? So it is in the cultivation of the bee. There are portions of our country (though happily they are few,) where honey-producing plants and trees, are too limited, without the aid of man, to secure a large amount of honey.

It is known that the only food of the bee is the nectar and pollen of the flowers, and that different varieties produce these deposits in greater or less abundance. .

Then, if we would prosper in our endeavors to multiply their species with success, we must cultivate those plants and trees, (where nature does not spontaneously produce them,) that will yield their flowers longest, and secrete the greatest amount of saccharine matter, within the reach of the bee. You may grow acres of blossoms, that will secrete thousands of pounds of honey, and still be beyond the reach of your bees.

Our purpose is to consider these flowers, that furnish saccharine matter in their blossoms. Whether these deposits are caused by exudations, or by the chemical action of the atmosphere upon the flowers, or by condensation, to us is a matter of but little moment at present; but to know that these flowers are reservoirs that yield the finest sweet that nature produces, is of vast importance to us if we can make them available. There are many kinds of flowers that are receptacles of honey, and this honey varies in quantity, and quality, according to the flower that secretes it. These miniature laboratories stamp with faultless certainty these luscious sweets with a color and flavor peculiar to themselves. Thus the white clover (*trifolium*

repens.) yields its pellucid syrups that vie with the crystal dew-drops, that like sentinels dot their ambrosial chambers, while its aroma is only excelled by the famed honey of Hymettus, which derives its flavor from the wild thyme that so luxuriantly grows on this celebrated mountain. This honey now ranks as No. 1, and the clover from which it is taken may be considered the basis of honey-producing plants in the United States, unless the anticipations of agriculturists are fully realized in the Italian bee. Should this be the case, the red clover will outstrip every other plant, or all combined, for the production of honey. In quality it ranks as No. 1, except in color, which is of a beautiful straw tint; but its flavor and richness so far excels the white clover honey that it may win a preference. It blossoms from June until October; will grow well on most of soils; and makes good pasturage, passable hay, and possesses valuable fertilizing qualities; thus combining more valuable properties than any other honey-producing plant on this continent. Buckwheat furnishes a fair pasturage, but is of short duration, unless sowed from time to time, varying from one to two weeks, from May until about the middle of July. In this way buckwheat may be made quite useful for bees; but the honey is of an inferior quality in both taste, color and smell; its taste is strong and somewhat pungent; its color dark, resembling some grades of cane syrups. It is said to improve in flavor with age.

Next in order comes the common mustard; that yields a profusion of flowers, that furnish a large quantity of honey and of good quality, but it is not cultivated to any extent; therefore it must be ranked at present with those transient flowers that fill up little

vacancies during the season. More will be said of this plant in another place, as we consider it next in value to the clovers. Besides these, there are numerous shrubs and trees, that afford large quantities of honey. Amongst the most prominent of these stands the basswood (*tila Americana*), that puts forth its blossoms about the middle of July, and they last nearly two weeks; it has long pendant blossoms, nearly destitute of fragrance, but yielding a very rich and pleasant honey, and some seasons in great abundance. This honey is peculiar for its superior, rich, soft, and mellow taste while new; possessing the least acridness of any honey known, excepting *honey dew*.

The next is the tulip (*Lioriodendron*), or white-wood. Instead of the long, pendant blossoms like the basswood, its flowers are of a bell shape, and usually stand somewhat inverted, so that they frequently hold a number of drops, and are said by some to yield a teaspoonful of pure honey in twenty-four hours. There is not the least doubt, that if this tree was as common as the linden, it would be classed at the head, for it is certain that it yields the most honey to the individual tree of any known in the United States. But its flavor I think inferior to the basswood, especially when new; possessing a pungent, aromatic taste, somewhat peppery, which is said will entirely leave it with age. In some sections this tree abounds quite plentifully, and might be cultivated almost anywhere. There may be localities where many of these trees and plants are not natural productions of the soil; yet there are but few locations that will not grow them, if transplanted and cultivated. And even this may not always be necessary as nature has in some instances provided ample substitutes in the vegetable kingdom.

We have also the apple tree, pear, quince, cherry, peach, plum, apricot, chestnut, horse chestnut, the two last often yielding large quantities of honey from their flowers, and also their leaves are receptacles for the honey dews. The soft maple often yields a fair quantity and quality of honey in early spring. The hard maple, (*Acer Saccharinum*,) also yields some in its season, and its leaves like the chestnuts, oaks, hickory, elms, basswood, &c., are sometimes covered with honey dews. Blackberry and raspberry, (*Rubus Strigosus*,) furnish a beautiful honey and in considerable quantities. Catnip, (*Nepeta Cataria*,) madwort or hoarhound, (*Marrubium Vulgare*,) motherwort, (*Leonurus Cardica*,) Mustard, (*Sinapis Nigra*,) next to the clovers ought to be ranked and cultivated for their great value for honey. They blossom at a time when the white clover fails to yield honey, and most other flowers have faded; the latter stands excessive drouths, and yields a profusion of flowers unequalled almost in the vegetable kingdom. It begins to blossom when quite young, and each successive day brings forth new blossoms for weeks in succession, until the little plant becomes a miniature tree five or six feet high; a perfect bank of golden-colored blossoms, almost from bottom to top, that are rich with pollen and fine honey. If fields of this were cultivated universally throughout the country our honey harvest might be doubled each year. The seed alone has become an article of commerce of no inconsiderate value, and would pay the cultivator a larger profit on this alone than many of the cereals now grown for market.

The dandelion furnishes a rich pasture, but its duration is too short to make it very valuable, except as one

of the promiscuous blossoms, that make up the interstices between those that are superior. The black locust as well as the honey locust yields much honey during the few days they are in blossom, and will pay any one well for cultivating, not only for honey, but the timber is only excelled by the red cedar for durability, and is a thrifty, growing tree, bearing blossoms when quite young, and retaining its vigor to half a century or more, blossoming as regular as the spring makes its appearance.

The mignonette, if cultivated to that extent that it might or ought to be, would certainly furnish a rich pasturage for bees; it blooms from June until the autumnal frosts rob it of its beauty. A small patch of this will perfume the air for quite a distance; and were it cultivated by acres for bee pasturage alone, we would be favored with a fragrant atmosphere that would vie with the spicy breezes of Ceylon, and a honey that would outdo the famed honey of Hymettus for aromatic flavor. But no! of all things to be considered it really seems the bee must be last, if nature will spontaneously produce flowers and honey enough, and the bees will gather enough for themselves, and furnish a good supply to their master without any trouble on the part of the owner, except to furnish an old box made of the cheapest lumber he can get, or perhaps will consent to let them live in a sap bucket through the summer, then give them a dose of brimstone in the fall, and take what honey they have gathered as rent for the use of the bucket, so he can use it again in the spring for his sap works. But if they can't do this, "they don't pay." Would you expect a man to pay you a debt if you were to rob him of every

means wherewith to labor, and tie his hands in the bargain? Then be reasonable with your bees; do by them as you do by your fine horses and neat cattle, and they will pay you better. Cultivate trees and plants that will afford them honey; they are not idlers and will never refuse to work if you give them good *hives* to live and work in. In summer give them labor and in winter protection, and you have a mint that will coin the gold. Little more than this need be done in many sections of our country; yet there are other portions where it may be necessary to do more than furnish flowers and a good hive.

On those vast prairies of the West, where their unbroken bosom is one perpetual carpet of flowers from spring until fall, there is one lack, and that must be supplied—that is water. Bees sometimes are subjected to the inconvenience of going long distances for water, and it should be remembered that the heat of a summer sun and excessive labor creates thirst, and they will fly miles to creeks and sloughs to quench that thirst when it cannot be obtained near by, losing much valuable time that might and should be remedied by keeping constantly near your dwellings and bees, a quantity of water. With these precautions heeded, a few of the spruces, pines, firs, or the different balsamic trees, such as tamarac, willow, balm of gilead, &c., planted around the dwellings, will not only afford propolis for the bees but will add beauty to every home and its surroundings.

Few persons are aware of the great amount of honey that a single acre of white clover will produce in a single year.

THE LARGE AMOUNT OF HONEY PRODUCED ON A SINGLE ACRE OF LAND IN ONE YEAR.

Feeling anxious to know how much honey an acre of white clover would produce, one fine morning in the month of June I examined several fields in the outskirts of Burlington. I then commenced numbering the heads of clover upon a single foot. I found them to vary from twenty-five to one hundred heads per square foot. I then made calculation of the number of square feet in an acre, which I found to be near 42,240 square feet. I then ascertained the number of drops in a pound of honey, which I found to be near 2,560 drops. I then supposed there were upon an average fifty clover heads to the square foot (which I think is a very low estimate, especially for this year, 1863,) and according to the above estimate, I find one acre of white clover did produce the enormous amount of 830 lbs., by supposing each head to give but one drop of honey; showing conclusively that a white clover country cannot be overstocked with bees; and it also shows the millions of pounds wasted every year for the want of bees to collect it.

BEE HUNTING, HOW PERFORMED.

In early spring or latter part of winter, while the snow is yet in the woods, on pleasant sunny days, when the bees fly out, they may be found lying upon the snow near the trees where they inhabit.

Many swarms of bees are found yearly in this manner. But the usual course pursued by BEE HUNTERS is to take a small piece of honey-comb, say two or three inches square; have a small box large enough to hold the comb; the box should have a cover with a

glass in it, that you can see your bees work. Dilute a small quantity of honey with water, (as bees will fill themselves quicker when the honey is thin;) put it in a small bottle or vial for future use.

Go to some chosen locality to commence operations; pour some of your prepared honey over your comb; look now on the scattering flowers for a honey bee, such as John's Wort, (*Hypericum perforatum*,) the common teasel, (*Dipsacus Sylvestris*,) golden rod, (*solidago*,) yellow weed, (or *senicle*,) as these, are most frequented late in the season. Capture one of the bees in your box; place your hand over the glass to exclude the light; he will soon commence filling himself with honey. You can now set your box on some elevated object, a fence corner, stump or stake, or anything that happens to be near; remove the cover entirely from the box, place yourself on the ground; on your back is the best position to see the bee as he flies from the box, as his motions must now be watched; when he first rises from the box he commences a series of circles, and then darts off in the direction of his home. If the weather is warm, and he has not more than a mile to fly, you may look for his return in from seven to ten minutes; let him come and go two or three times from this place, until you are positive of the direction or line in which he goes; if his home is not far off, after he has visited your box two or three times he will bring other bees with him. You can now move one of them, closing up the box and moving to the right or left, as the case may be, but select some good place to observe your bees as they fly from the box; always bear in mind that to see them well they should be kept between the eye and the sky. In carrying your bees you

must commence to carry them as soon as the bee commences to fill himself with honey, and stop long enough before he is filled, that you can slip the cover off, and the bee not become aware that he has been moved until he comes from the box and finds himself in a strange place; he will then perform the same aerial circuits as at the first place. To keep the line sure, (should the bee you move not work well,) it is always best to leave a small piece of comb and honey at the first starting point, and one or two bees to keep to work on it until you can establish a line in another direction. Proceed as directed in moving your bee from time to time, until you establish a line running nearly at right angles with the first; follow this line, - and where it crosses the first will be within a few feet of the tree they are in. In order to keep up a communication with the swarm, you should from time to time carry your bees, as described above, in a direct line towards the tree.

They are usually found in hollow trees, near the tops, and often in large limbs. It requires some skill and practice to readily detect them, even when the locality of the tree is known.

They seem to give some kinds of timber a preference where a diversity exists, such as the ash, the elm, the basswood, hemlock, pine, &c., but, I believe, are known to inhabit almost every kind that will accommodate them.

When the flowers have disappeared, and you desire to find bees, some other course must be pursued. Some use the essence of anise to scent the honey with; this may do if you are in the immediate vicinity of a swarm—if not, it will do no good. The most effectual

thing I know of,—and I believe the most effectual thing known,—is the burning of old bee comb. This may be done by building a small fire on the ground in the woods; take a couple of small-sized stones—flat ones if you can find them; lay them in the fire until they become hot; take them out, place the old comb between the two, and let it burn, and if there is a swarm of bees within a mile and a half or two miles, (with a favorable atmosphere,) some of them will visit your burning comb. Secure one in your box, by placing your comb with honey on or near by the burning comb, which should be covered up with leaves and dirt; after the bee gets well at work, proceed as in hunting them when you have caught them on the flowers.

- If you have any doubts of the same bees returning, you can sprinkle a little flour on their backs while they are filling themselves with honey, without disturbing them in the least, and they will carry this mark a number of hours.

I can furnish all persons desiring, Bee-boxes designed especially for bee-hunting purposes. They are made to be used double, or if desired single, in two separate parts,—each part answering as a complete box, independent of the other.

This is very desirable in hunting, leaving one part at the first starting point to retain the line until you can establish a cross line somewhere else.

Boxes, painted and japanned, price \$1.

HOW TO TAKE BEES AND HONEY FROM A TREE.

After the tree is found, it is now necessary to obtain the honey. If the tree will admit of climbing, an expert hand can ascend and fumigate it; then with a

saw and hatchet cut an aperture in the tree and remove the honey. Pails, hives, &c., can be drawn up and let down by means of small ropes; when this mode is practised there must be limbs convenient for the operator to stand or sit upon. When this is not practicable, the tree must be cut, and in doing this select the best place for the tree to fall without breaking. If there are any large limbs on the tree, and you can have these strike the ground first as the tree falls, it will, many times, take much of the shock from the body of the tree. But should they be in a hollow limb, as is often the case, it is better to fell the tree so the limb they are in, will not strike the ground. When the tree is felled you must provide yourself with a large handful of hay or straw, and ignite it and put it as near as possible where the bees are coming out from the tree—the fire will destroy many of them and the smoke will subdue the remainder. You can then cut out enough of the tree to take out the honey. Should you design saving the bees, no fire or smoke must be used. After the tree is felled, let them get quieted down; then with a fumigation pipe give them smoke enough to keep them quiet. The tree may be sawed above and below where the swarm is, and this piece may be taken to the house; and if too late in the fall to transfer, set it up in some well-protected place until spring, when they can be transferred into a movable frame hive,—the same as from an old-fashioned box-hive.

THE ITALIAN BEE.

During the last few years speculation and excitement have run high in relation to the probable advantages of the Italian or Ligurian bee over the common kind.

This bee seems to be a distinct species from the common black bees, yet so closely allied to them as a class that they readily mingle and by coition produce a hybrid species, partaking of both the Italian and common kind. They appear to be natives of the Alpine regions of Switzerland and Northern Italy, being found in no other country on the globe, except by importation. From the elevated position of the country which they inhabited, it was thought that they naturally possessed a hardiness and vigor that a colder climate would be likely to generate. Their graceful forms, their attractive color, and their apparently isolated condition, attracted the attention of some amateur apiculturists who, perhaps at first, to gratify a love of marvellousness, attempted their introduction into the lower countries of Germany. It was found that they soon became acclimated and stored larger quantities of honey during the honey season than the common black bee. This was accounted for on the ground that they visited flowers that the common bee passed by, and seemed to endure fatigue, and a lower temperature of atmosphere with less injury than the common kind. These favorable indications induced new trials that proved successful. Others, stimulated by the prospect of gain, began to introduce them into their immediate sections, until half of Europe was alive to the subject. By intermediate channels, the excitement reached this country, and in 1860 a small appropriation of \$2,000 was furnished by our government to test the feasibility of their introduction here. This sum was coupled with the liberality of Mr. S. B. Parsons, of Long Island, who undertook the task of visiting Europe to make the necessary arrangements and superintend the importation into this country. The

project proved successful so far that he succeeded in getting two colonies safely across the Atlantic, and from this dates their introduction into the United States. Up to the present, they have gradually gained the confidence of apiculturists, and are fast winning public favor by a general introduction amongst the bee-keeping community. It is certain they seem to possess a vigorous and energetic constitution, superior tact for collecting honey when the common bee is nearly idle. The queens are very prolific and, as a general thing, Italian colonies are quite capable of self-protection against invaders. One marked characteristic with them is said to be their ability to extract honey from the red clover, which, if one-half is true, a few Italian colonies and a field of red clover would be a "mint." I think they need a careful and studied investigation before we concede too much. There are some delicate points connected with the past and future history of this bee that will puzzle the "knowing ones" of to-day; but I trust true science will in time give us facts instead of theories. In our ardor or over-heated zeal let us not crush truth in our path, or, "phœnix" like, it will reproduce itself from its own ashes at a time when least expected.

HOW TO MAKE HONEY-COMB INTO WAX.

Directions for Extracting Wax from Combs.—Put the comb to be reduced to wax into a bag made of coarse strainer cloth, not filling the bag very full, and then immerse it in an iron kettle of sufficient size, (for no other metal should be used for this purpose,) covering it with water. This should be kept two or three inches below the surface, which may be done by putting a stone or piece of iron in the sack to sink it, occasion-

ally turning it over when boiling. Most of the wax will boil out and rise to the top in the course of an hour and may be dipped off into some clean cold water. Then take a small portion of the mass and put into a strainer and squeeze it out by means of a pair of clamps, made for the purpose, or a pair of tongs will answer. It should be strained into water while it is hot, to prevent its sticking to the tub.

Another way.—First, put the mass into a kettle and cover with water and boil until the wax gets thoroughly melted. Then, with a dipper, the most of the wax can be dipped off, and the balance can then be strained or squeezed out as in the former case. The wax should be put back into the kettle again and melted and strained over into tin pans, first greasing them to prevent the wax from sticking to them.

HONEY DEWS.

Much speculation has for a long time existed in relation to the deposition of such sweets. Huber, Curtis, and others suppose it to be a deposit from the body of the aphid that feeds upon the juices of leaves of different varieties of trees, and that through the chemical action it undergoes, in the stomach of the aphid, it becomes honey, and is ejected by the insect in such quantities as to cover the leaves of large trees with this honey. Bevan was of the opinion that it was both a deposition from the aphid, and an exudation from the leaves. Both parties have their followers, but with what amount of evidence to sustain their theories we are unable to determine.

There is no doubt but the aphid has been seen to eject from its body a saccharine substance resembling

honey ; but it is equally certain that leaves of certain trees are found coated with honey in the absence of the aphid. Therefore, while I concede isolated instances in which similar deposits may occur from depositions of the aphid, I think we must look further for a solution of this singular phenomenon.

If it is the aphid, how does it happen that only the upper surfaces of the leaves show this substance ? The inner leaves of the trees upon which these deposits are found, seldom show any signs of it on them. Are they an insect so anomalous from all other insect life that they make their appearance, shower their liquid sweets, and perish in about ten hours, and this only a single day in the year, and perhaps two or three days at various times ?—sometimes appearing one year and then skipping one, two or three years before making their appearance again. I know there are species of insects that make their appearance, fulfil the office of an existence, and pass away in a few hours, but such insects return periodically and at stated seasons. Not so with this saccharine deposit or honey dew. It makes its appearance sometimes the fore part of June, sometimes the middle or latter part, or in July or August, just as it happens, visiting but a single species of tree at a time, and this only at evening, or during the night, when there are other trees near by ; and those may escape, although it is known that at other times, *vice versa*, the same phenomenon is manifest in that species. It presents to me a singular anomaly, that if it is the production of this insect, it should occur so manifestly irregularly, when it is known that this species of aphid are numerous, and may be found on the leaves of different species of trees, at the same time that the chest-

nut or hickory leaves are being coated with it, yet no signs of it appear on those trees during a whole summer. If the leaves of those trees that are coated with this dew are examined with a glass, not the least trace of punctured leaves is any more observable than in those not so coated; consequently this dew cannot be the juices sucked by the aphides from the leaves, and undergoing a chemical change in the stomach, and ejected as an excrementitious substance in the form of honey. If such quantities of juice were extracted in a single night from the leaves as to coat them completely over, and even drip from the leaves beneath the tree, as I have repeatedly seen, would not these leaves present in a few days a shrivelled and dried appearance?—which is not the case. They retain all their lustre after, as before, such dew is found upon their surfaces. Whatever may be the truth of the subject, I shall readily yield to it as soon as unquestionable facts are presented. It does not hardly seem probable that it can be an exudation from the leaf, as it occurs at a time when the leaves are quite mature, and in dry weather when a superabundance of the circulating juices would be more likely to be retarded than accelerated, at least to that degree that would cause extravasation of the circulating fluids. If such was the case would it not be found on the under as well as the upper surfaces of the leaves? Would it not also be found on leaves that were shaded, as well as on those exposed? I am aware that a theory or hypothesis assumed, may not always be reliable, but I think they are sometimes ominous of existing facts in embryo. I shall venture to advance a hypothesis that may throw some more light on this subject, or raise the question in some studious mind, to

point us to the truth. This dew never occurs until after the principal trees and flowers have secreted large quantities of honey in their cups,—most flowers secrete more or less of it, and but a small quantity is ever gathered from them. It seems to be a portion of the life principle in every flower, and is found at the base of the antheral portion of them in minute particles or drops caused either by exudation, or chemical absorption from the surrounding atmosphere, or a combination of the two. It usually takes place during the evening and night, and if not gathered by insects, is gradually evaporated and absorbed by the surrounding atmosphere the following day. This process is continued for weeks, and even months. Large quantities of this saccharine substance, must be produced in the atmosphere,—it is often perceptible in passing gardens of flowers, orchards, fields of clover, &c. How frequently do we hear the expression, “How sweet the flowers!” We add,

“How sweet is every passing breeze
That stoops to bathe the opening flowers,
And nods the blooming trees.”

It is the floating particles of saccharine substance that is passing into the atmosphere, that greets your olfactories with *sweet*. “Mother Earth,” then, and the grand bouquet she sports on her bosom, does not contain all the sweets in nature. No, your atmosphere is filled with it, and all we want is a chemist, that will precipitate and condense those particles, and you have a honey dew. The oak, the hickory, basswood, chestnut, horse-chestnut, elm and maple, are chemical laboratories where these sweets are distilled. Each tree acts upon the air

that surrounds it, and under favorable conditions these floating particles are precipitated to the lower strata of the atmosphere; the leaves of certain trees act as condensers where the particles unite, often moistening and dripping from the leaves. Its appearance upon the upper surfaces only, and on leaves most exposed to the action of the air; its appearance only in warm, sultry weather, with absence of rain or dew, and only at evening or during the night, the very time when honey is deposited in the flowers; its perfect freedom from all aromatic flavor, being purely sweet, a feature that no other sweet in nature possesses, argue well for its atmospheric origin. The aphid may sport in this aerial nectar, but that all of this is a product of an aphid, needs much more evidence than we now possess.

DISEASES OF BEES.

The bee, although an insect, is, like all the animal creation, subject to disease; though fewer types or forms seem to manifest themselves here than in most other departments of animal life. There seems to be but two distinct types of disease that have been noticed by apiculturists to which the bee is subject in this country. These are *dysentery*, and *foul brood*. The first of these generally makes its appearance in the spring of the year, and may be known by the bees discharging their excrements over their combs and interior of the hive, or wherever they may be at the time; and instead of this being of a natural yellow color, it exhibits a muddy, dark appearance and a sweetish, sickening, offensive smell, which becomes intolerable. The bees appear weak, have a dark-soiled appearance, and manifest a loss of energy; the numbers gradually decrease until

the colony finally perishes. Many times it results from stinted stores, and being fed on some other food than honey. Bees will subsist upon almost any saccharine substance in liquid form, for a short time, but when obliged to live on any sweet a length of time, except honey, they sicken and die. *Pure honey* is the natural food of the bee, and if they must be fed on anything else, it should be that sweet that approaches nearest to the nectar of the flower, and even this when combined with too great a quantity of water often sours in the cells from a lack of proper ventilation, and will produce the same effect on the bees as other inferior sweets. This disease seems to originate from these causes, and does not appear to be contagious, except to the inmates of their own hive, and here it usually proves fatal. It seems from the best information I can get from experience and inquiries, that it results from consuming sour honey, or by being fed on prepared syrups when short of pure honey, or on *Southern honey*. It should be remembered that *Southern honey* should never be eaten by persons, or fed to bees, without first bringing it to a *boiling heat*; this will evaporate the poisonous qualities that it frequently contains, and renders it perfectly harmless. Proper ventilation in hives is very essential, that the watery particles that are collected with the honey may be evaporated as soon as possible, that the bees may seal it over and preserve it from acidity. Bees, when subjected to prolonged confinement, being obliged to retain their feces until they discharge them in the hive, thus create a carbonic acid gas that has a deleterious effect upon the inmates of the hive, and may result in dysentery.

CAUSE OF FOUL BROOD

is the destruction of the nymph, or pupa of the bee, by some derangement which causes it to putrefy in the cells.

But at what particular state or age of the nymph it is most susceptible to this disease, we are unable to determine. When it makes its appearance in a colony it seems to spread over the sealed portion of the brood combs. The caps of the cells appear indented, and slightly shrivelled, emitting a disagreeable stench that is often perceptible in passing a hive several feet off. Upon dissection, the cells, instead of finding young bees in them, are filled with a mass of corruption; the larva in unsealed cells become putrid. It is said to be contagious, and whole apiaries have in some instances been destroyed by it. It is not of recent origin, as some American writers suppose, but dates far back in the history of the bee. In this country it has never yet assumed an epidemic form, but appears in isolated sections as an epidemic, of malignant form.

In the Southern States and warmer latitudes, where bees throw off many swarms in a season, this disease is more prevalent than in the more northern sections of our country.

The disease is little known except in isolated instances. This would indicate to me, that overswarming, thereby exposing the young brood to atmospheric changes, will often give rise to it in a single colony; which may, with favorable conditions, infect other colonies; and, finally, destroy the apiary. Various theories exist as to its origin, which my limited space will not allow me to recapitulate in the present volume.

I still retain my former views in regard to its charac-

ter, and am sustained by a more thorough investigation of its features. CHILLED, or *exposed brood*, arising from sudden changes from warm to cold, forcing the bees to eluster more elosely together, thus leaving a portion of the brood exposed to chill. Sometimes, and very frequently too, from over-swarming, leaving the parent stock too few in numbers to eover and hatch the young brood, which is no doubt a premonitory eause; and when once the disease makes its appearance under certain eonditions it may become contagious; like pestilential diseases in the human family. To fully determine from whence these take their origin must be left for future investigation to solve the mystery. "An ounce of prevention is better than a pound of cure," is an old adage which probably would pay well to heed here. The perfect adaptation of a good movable comb-hive seems here indispensable, for if such a hive is in use, you have every facility to aseertain the true eondition of your bees at all times.

Atmospheric changes produce organic derangements in the animal world, and why not in the insect? Miasmatic vapors generate disease in particular organs; sympathy exists between a combination of those organs that go to make up a whole or individual form of a species. This same sympathy exists between individual forms of any distinct type. Therefore, diseases that are contagious, very often take their rise in miasma floating in the atmosphere, and emanating secondarily, from putrefying masses of any particular type or class of the animal kingdom. Hence, we conclude, from the fact that if this disease is contagious, the atmosphere is its natural channel of communication and might have been the first cause, as well as to transmit the secondary.

We can readily see that a little chill in the first place would destroy the vitality of the tender larva; this in the absence of life would commence decomposition; other larvae, or even nymphs, might be susceptible of absorbing the floating particles of disease thrown off from the same until the atmosphere of the whole hive become impregnated with it; which would subject all the brood susceptible to its influence to the same fate.

Should this corrupted mass remain in the hive any length of time, the vitiated air might infect the combs and honey to that extent that they might impart disease to others coming in contact with them.

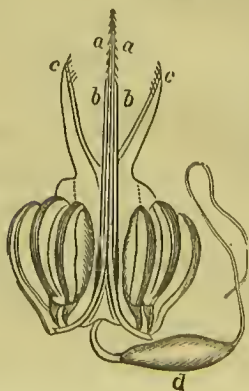
MOTH MILLER, (*Tinea mellonella*.)

Of all the pests that infest the bee-hive none is more to be dreaded than the Moth Miller. No habitation for the bee has ever been constructed that will exclude them and give free egress and ingress to the bee. It makes its appearance in April and May and continues during summer and fall, August, September and October being the season when most of them make their appearance. They are seldom seen during the day unless disturbed, or the day is dark and sultry. Towards evening they may be seen by hundreds, darting around the bee-hives, especially if a lighted candle or lamp is brought near. They are about one-half inch in length, of a light gray color, body quite small, wings seemingly joined to the body near the head, and widening as they extend back, giving them something of a fan shape, making the miller appear to stand nearly on his head while in a state of rest. They usually deposit their eggs near the entrance of the hive, unless the colony of bees is quite small. In this case, they get as near to them as

possible, knowing that the warmth of the swarm will assist incubation, and to have the young larva in the immediate vicinity of the proper food to develop and mature the worm; wax or bee-comb being its most desirable food. Its presence may be detected in common hives by gently lifting up the hive, and the bottom board will be covered with their excrements, appearing like little pellets, much resembling ground coffee. The miller usually deposits its eggs in small cracks, crevices, &c., between the bottom of the hives, if they are the old-fashioned kind, and the bee-stands, and in the accumulation of filth on the bottom boards of hives where small stocks are kept that are unable to keep the hive clean, and in every possible place where it can gain an entrance. Here the Compound and Glass Hive is superior to every other hive, as it has tight bottom boards, and it is impossible for the miller to get in except at the entrance, and this is always, or ought to be, contracted quite small, to prevent robbery at the season of the year when the moth miller is the most plenty. The eggs are white, small and round and would hardly be observed amongst the filth of the hive. Many suppose the bees frequently carry these little eggs on their feet or legs into the different parts of the hive. I have no doubt this may be the case many times, although it is something I have never seen. The anther dust of flowers will frequently adhere to bees in such quantities as to produce an apparent discoloration of the bee. Upon a close examination, it will be found the bee is covered with fine, short bristles, that, as they come in contact with the pollen, sweep it from the surfaces of flowers and adhere to them; and were the bee to come in contact with the minute eggs of the miller, the theory is

plausible that they might adhere to them and be scattered promiscuously through the hive by dropping from the bees and sticking to the combs, where the heat of the swarm would soon hatch them out. If you have plenty of bees to cover the combs, as these little worms hatch out they will throw them down on the bottom boards of the hive, and with a little attention on the part of the bee-master, they can all be kept out; but if the hive is well filled with comb and but few bees in the hive, it becomes difficult for them to protect so much territory; consequently, small colonies are more likely to be infested by millers than strong ones. Here lies the grand secret of successful bee-keeping. *Keep your stocks strong*, as it is one of your best guards against the moth miller; and this can only be done by the use of a movable comb hive.

THE STING OF BEES.



"An ounce of prevention is better than a pound of cure," is an old adage, and so far as it relates to bee-stings, it is true. Few bees are disposed to sting unless some supposed injury is offered. They are exceedingly sensitive little insects, and particularly attached to their respective families; so much so, that they never refuse to defend their home and stores at the expense of their lives. These characteristics should be fully understood and per-

sons should be governed by them. *Educate yourself to understand your bees before you attempt to teach them.* This will be one of your best safeguards against their attacks. When you approach a swarm of bees, especially, strange colonies, let your manner be studiously careless, as though they were unobserved by you, but have your ears open to every sound; approach them slowly and fearlessly; if your presence is not agreeable, some one of their number will volunteer to warn you of their displeasure. This one will give you more attention, and approach you with a sharp humming sound, usually very near the face. If you are near the hives, do not attempt to brush them away, as this will be accepted as a signal of attack, but rather turn slightly away, and if followed by the bees, appear to not notice them, and they will soon leave you. But should you be unfortunate enough to get stung, I will here give you some of the most popular remedies known. First, extract the sting as soon as possible; the quicker it is removed, the less it will swell. If inserted where it can be reached with the mouth, suck the poison from the wound as soon as possible. It is bitter and pungent to the taste, but is harmless when taken into the mouth in small quantities, as from a wound. Do not rub the part stung, as this will tend to spread the inflammation. Cold water, if applied immediately, is effectual in many cases. Tobacco, moistened with water and bound on, is good. Hartshorn (*aqua ammonia*,) is one of the best remedies known, if applied immediately, from its volatile properties. When the wound is bathed with it, the poison having a greater affinity for the ammonia than for the blood, it readily leaves the wound to mingle with it, and the atmosphere possessing stronger attractions

for the ammonia than the human system, it readily absorbs the poison and escapes with it into the atmosphere. It sometimes happens that persons are very badly stung. In this case, the best remedy known is to drink of some spirituous liquors all that a person can bear. It will neutralize the poison and no bad effects will follow. (I hope none of my bee-keeping friends will get stung for the sake of trying the remedy.) Honey is said to be effectual in some cases.

A cloth, folded a number of thicknesses and wet frequently with cold water, is good to prevent inflammation. Ice is best when it can be obtained. Cold water, frequently applied, will relieve some persons. Clay moistened with cold water or spittle is excellent.

Homœopathists use the concentrated properties of the bee, *apis mellifica*. A strong tea made by turning boiling water on a handful of bees and taking an occasional sip of it, is said to be a sure cure for stings. This probably is the base of the homœopathic remedies.

WHY BEES ARE APT TO STING ONE PERSON MORE THAN ANOTHER.

The very acute sensibility of the bee, we have no doubt, directs it in its actions towards individuals. From the wonderful powers manifested by it in this respect, under certain conditions, we can hardly doubt that its decisions are directed by this faculty; and that a repugnance to certain individuals arises from peculiar emanations from them that is offensive to the bee. And when such persons annoy them by their presence, they become irritable and it is safest for such persons to retire from their presence. Individuals that manifest fear are more likely to get stung than those of

more steady nerve, from the fact that when approached by bees their motions become quick and excited, and the bees accept them as intended injuries; hence such persons are more liable to get stung from this cause.

STINGS OF BEES INJURE SOME PERSONS MORE THAN OTHERS.

The poison of the bee affects persons differently; some will hardly notice the sensation of a bee sting; on such, no swelling or inconvenience is occasioned, while others suffer intense pain, swelling, and in some cases, death. This is owing to a condition of the system at the time of being stung. If the system contains at the time of being stung a quantity of matter corresponding with the properties of the poison injected by the bee, such persons suffer no inconvenience from being stung, but let the contrary be the case and inflammation ensues immediately. Hence frequent stinging will so change the condition of the human system that the poison loses its effect. This change frequently occurs independently of exciting causes; many persons when young suffer severely from the sting of bees, and in maturer years its effects are harmless, and *vice versa*. Where persons are so extremely sensitive to the poison of the bee, my advice is to protect themselves whenever they wish to do anything with their bees.

QUEEN CAGES.

As it is necessary sometimes for the apiculturist to keep a surplus of fertile queens on hand to supply queenless colonies with, or such stocks as have barren queens, which should be changed every three years, I here describe a very suitable cage for imprisoning such

queens. Take a piece of a board seven-eighths of an inch in thickness, an inch and a half or two inches wide, two and a half inches long, bore an inch and a half hole through it, then put some wire gauze over the hole on each side. Bore another one-half inch or five-eighths inch hole in one end or side in which to put in the queens, always putting four or five worker bees with her and putting in a cork to keep them. Such cages may be put upon the top of the frames, and if the weather is warm the bees will come up and feed her; and if the weather is cool cut a piece of comb from some of the centre frames just large enough to admit the cage; set it in and in a few hours the bees will wax it fast and nurse the queens. A number may be put in the same hives at once and the bees will feed them, always keeping a few bees in the cage with the queens, providing the old queen of the hive is also caged.

Another form of cage can be made of a small piece of wire cloth; roll it around the finger, pinch one end together so as to close it, in the other end fit a cork. These should be made long enough that the queen can have space of an inch and a half at least; this style of cage can be flattened enough to crowd them down between the combs, and be much warmer in cool weather, and the bees will be more likely to take care of her.

HOW TO STOP BEE ROBBERY, EITHER BY OUR OWN OR FOREIGN BEES.

Bees seldom rob when there is plenty of honey in the fields; it is usually in spring and fall, before and after the honey season. Weak swarms are more likely

to suffer in this way than strong ones, yet it sometimes happens that strong stocks are attacked by robbers. We have now two important points to consider.

First. Are they *robbing*? and if so, how to determine the fact. When bees are robbing some unusual agitation about the hive being robbed is always observable, such as bees running backwards and forwards in front of the hive, two or three bees attacking one and dragging him off the platform, and an unusual number of bees flying in front of the hive. These are strong symptoms of robbery.

Second. Are they your own or foreign bees? To ascertain this fact, take some flour and sprinkle on their backs as they are passing out and in, then go to your other hives and see if any of the white backs enter; if they do they are the robbers. You do not care about catching your own bees, but you must break up the robbery: first, close up the entrance of the hive being robbed, so that but a single bee can pass out and in at a time, then take the fumigation pipe and fumigate the *robbers in their own hive* thoroughly; this will give them plenty of business to attend to at home, and they will stop for the time, and if they commence again, fumigate them as before two or three times, which will usually stop them entirely. But if they are foreign bees then you must pursue another course. Should none of these white backs enter your hives, then it is quite positive they are your neighbor's bees, or wild bees from a tree. You must now play bee-hunter with them; lie flat upon your back near to the hive and watch them, and see which way they go; should they go in the direction of your neighbors you had better go and examine some of them; if you find they enter there,

by permission you can use the same remedy as with your own bees; but if this is refused then you must use the remedies that will make them willing. But should you not find the robbers in your own or neighbor's hives, and are undecided whether they are robbing or not, catch some of the bees as they are passing out and in the hive, pull them apart that you can examine their honey sacks; if honey should be found it is quite likely you have caught a robber. Examine a number in this way, and if you find their honey sacks filled as they are going out and empty as they are going in, it is proof positive; (their honey sacks when filled are about the size of a small pea, and when the bee is forcibly pulled apart this little sack is exposed to view;) you may be sure the robbery has commenced. You must now close the entrance of the hive nearly up, leaving space enough for two or three bees to pass out and in at a time; if they cannot now defend themselves, close the regulator so that but one bee can pass out and in at a time. Should they not be able to defend themselves, then the entrance must be closed altogether. When this is done all of the ventilators of the hive should be opened, or there would be great danger of melting them down; at the same time the besieged hive should be put down cellar where it is cool, and kept there until near evening, when they should be set upon the stand and the entrance opened, and what robber bees there may be in the hive allowed to depart, and then by contracting the entrance, by slipping the regulator to the left, so that there will be a space of one-quarter inch allowing only one bee to pass at a time. By following this

course it will break up the robbery in short order, if discovered soon after its commencement.

But should the robbery get full under way before being discovered then there is no other alternative but to capture the robbers.

HOW TO CAPTURE ROBBER BEES.

Should the colony being robbed be a small one, and not able to protect themselves with the help of the regulator, the hive may be closed up entirely at the entrance, by opening all the ventilators, leaving it on the stand until evening, providing the weather be cool; remembering to open the regulator about sundown, and let the robbers you shut in go home, which they will readily do. Then remove the boxes and put the preserver on, and carry the hive into the cellar; after they become quiet the cap may be placed on again. A decoy hive, looking like the one being robbed, must now be placed on the stand where that stood. A bee-catcher, placed in the entrance with the regulator, so adjusted that no bees can pass out and in, except through the bee-catcher; a frame or two, containing comb and honey, should be put in at the commencement, for the robbers to cluster on as they enter the hive. Early the next morning the robbers are sure to come; and expecting to find honey where they found it the day before, they rush in through the bee-catcher and are prisoners. In a few hours you will have them all in your hive. You can now destroy them, or have them work for you ever after, the same as your own bees, by keeping them in the cellar one week and supplying them with a queen. Should the swarm be a large one, the above method would not be considered

safe in all respects. Such swarms are seldom disturbed, unless they have lost their queen; in this case let the swarm be ever so large they will offer but a feeble resistance.

But it would not be safe to close the entrance of such a hive, and let it remain on the stand not even an hour in a warm day; the boxes should be removed; the *Preserver* put over them; carry them immediately into the cellar, and let them remain there until about sundown; then carry them out, and put them on the stand; open the regulator, that the robbers may go home. After they have gone, close up the hive and put them in the cellar, and proceed as in the first case.

HOW TO PREVENT BEE ROBBERY.

Always contract the entrance of your hives to one inch, or less, before, and after the honey season, according to the size of the swarm.

HOW TO CAPTURE A SWARM OF BEES FROM A TREE.

This can only be done at certain seasons of the year, in the spring, before many flowers make their appearance, and in the fall, after they have nearly disappeared—as bees refuse to work well on comb, when there is plenty of honey in the fields. A bee must be captured, as in bee-hunting. This is usually done by going near to some forest, and on the wild flowers catch a bee in a box, as in bee-hunting, with a small piece of comb containing some honey diluted with water, as they will fill themselves much quicker on this than on thick honey. After you have caught one bee, and he fills himself with honey, he will go

to his home, whether it is a hive or a tree ; in a short time he will return and fill himself again, and leave for his home ; about the third or fourth time he will bring another one with him, and soon another, and so on until they will come by hundreds as long as there is honey for them. It is best that you commence about the middle of the afternoon ; they will get well at work then during the night, the whole colony will become acquainted with the fact, and ready for operation the next day. A glass hive is much superior for this purpose, though the Compound Hive might do under favorable circumstances, and for this purpose would be superior to any other, as by the use of the ventilators light and air can both be given. The next morning everything should be in readiness for the occasion. One of my glass hives is now necessary, as they are best adapted for this purpose, with two or three cards of comb in, containing honey ; then place the hive near where the bees have been at work in the box ; remove the cap from the hive, and place the box on the top of the frames. The bees will soon find the honey in the frames ; and soon as they do so, the box may be removed and the cap placed on the hive, so the bees can no longer enter from the top. The regulator may now be adjusted so the bee-catcher will exactly fit the entrance, but it must not be put in yet. When your regulator is fixed, the bees that were shut in the hive will be forced to come out at the entrance ; this they will readily do. They should be left to go out and in freely, for one or two hours, when the bee-catcher may be placed in the entrance, and one of the doors opened, that the bees as they enter the bee-catcher will be attracted to the light given through the glass, which

will have a tendency to keep them from crowding around the bee-catcher while the bees are entering the hive. In a few hours you will have most of them in your possession.

There will be a few that will stay in the tree with the queen, and cannot be induced to leave; consequently provision must now be made for this deficiency. The hive must now be moved to a dark cellar, and left there five or six days, when they will be broken down in spirit, and willing to receive any favors you see fit to grant them. They may now be brought from the cellar, and placed upon a stand away from other bees, and a queen given them, (see Directions for Introducing Queens,) or a piece of comb containing some worker eggs, or larvæ under three days old, and they will rear them a queen in about sixteen days. This must be in a season when there is a probability of there being drones for the young queens to pair with, or it will be useless for them to rear one. All apiculturists should, during the season of drones, rear some extra queens and cage them, (see Queen Cages,) thus making provision against emergencies of this kind. For an inexperienced person, perhaps it would be better to first cut the tree and take out the honey, and secure the bees at the same time in a hive, for future operations, first fitting some of the honey into the frames.

HIVES, BEST LUMBER FOR.

Good merchantable pine lumber is best; hemlock next; black walnut, chestnut, oak, whitewood, poplar, basswood, &c.; the two last are probably the poorest of any, yet bee-hives may be made of almost any kind of lumber. Basswood and poplar absorb and retain

moisture to a great extent, therefore are not durable, and should never be used without a good coat of paint on them.

COLOR OF BEE-HIVES.

White is best, as its attraction for the rays of the sun is less than any other color. Persons that use my hives, when they *make hives, or get them made*, should be very careful to have every part of them correspond with those of my manufacture; then the frames, boxes, eaps, &c., of one hive will fit every other hive in the apiary, which is a great advantage many times.

HOW TO PUT ON HONEY BOXES.

Great care should be exercised in putting honey receptacles on, and not injure the bees. It is always best to puff a little smoke over them from the top of the frames. This will drive most of them below. Then place one end of the box on the top of the frames and shove it carefully along endways of the frames until you get it in its proper place; the bees will give way to the gentle pressure of the box and you will not injure one of them. What few bees remain on the outside of the box can be brushed off carefully and the eap placed on the hive, always remembering to have the boxes come snug against the eap on the front side, that the bees cannot get between them in passing directly from the honey box to the outside of the hive.

HOW TO PUT ON BOXES TO GET A LARGE AMOUNT OF HONEY IN A SINGLE SEASON.

When one set of boxes is filled, or nearly so, they should be raised up and other boxes placed under them.

By having two large holes in the top of the boxes put under, corresponding with holes in the bottom of the first set of boxes, you will give the bees a chance to pass from one box to the other, and they will continue to fill up and seal over that in the first boxes, and immediately commence in the lower boxes and fill them in the same way. In this way they will store a much larger quantity than they will to remove the boxes, until the second set is filled. They will not miss the filled ones on the top, if removed, when they are at work in the under set of boxes. There will be but few bees in the upper boxes, and on removing them the holes in the top of the under boxes must be closed up, and when these are nearly filled, raise them up and put empty ones under as before. They will fill them much quicker if put on in this way than to take each set entirely from the hive. Where this course is pursued, a box just the size of the rim of the eap must be put over the lower set of boxes and the eap placed on top of that. This will cover both sets of boxes and will answer a good purpose during summer. Rough boards will answer for this as well as any.



Queen



Worker.



Drone.

The above Cuts illustrate the three classes of Bees that constitute a swarm—*Queen*, *Worker*, and *Drone*. For a particular description of these Bees, see pages 74, 76, and 78.

ADVERTISEMENTS.

THE PATENT REGULATOR

Is a metallic instrument attached to the entrance of each hive, made adjustable by means of a thumb-screw, wherein the entrance can be made very large or very small, as occasion may require; by giving an entrance so that only one bee can pass at a time, will usually prevent robbery; in the height of the honey season a full entrance, four and a half inches, should be given. By placing the instrument at the lowest gauge when a new swarm is first hived, will prevent them from flying to the forest, as the Queen cannot get out owing to her large size—the bees will never fly away unless the Queen can go with them.

Can be attached to any kind of hive, but cannot be furnished to parties unless they have purchased the Right of the Kidder Hive. (For price see price-list.)

KIDDER'S PATENT BEE-CATCHER

Is a device which every bee-fancier should be provided with. It being reversible and removable, can be attached to *any* hive after an entrance is made for its reception, which can be done with the bees in the hive by putting them through a subduing process with the Fumigation Pipe.

It is designed to be used in capturing robber bees, especially when they come from an unknown source; or wild bees from a tree. By the use of it, bees from the field can be secured in the hive in less than one hour, in case a swarm is to be sold or removed in the middle of the day; and, by the use of it, in combination with the Regulator, the Drones in the hive can be destroyed in twenty-four hours.

Great care should be exercised when a swarm is to be captured and not catch bees from neighboring apiaries, as they are more easily caught than wild bees from a tree.

THE BEE-PRESERVER

Is a new device, which should be in use with every bee-keeper using my hives.

They are designed to be placed over the top of the hive when the bees are in winter quarters in the cellar or an underground room, as it will keep the rats and mice out of the hive, and will also keep the bees in and at the same time give them any amount of air, which is very essential should they occupy a damp cellar. (See Chapter on the Wintering of Bees in this book)

The Bee-Preserver is of much value when a colony of bees are to be shut in the hive or removed in a warm day to any other locality, as it will keep the comb frames in their places and allow them all the air necessary; the cap of the hive can be taken off, and not a bee can escape. (See Book of Directions for their use that accompany the hives.)

The *Bee-Preserver* cannot be used to advantage when the hive is wintered out of doors, or in any other place where it is cold enough to freeze. Price single, 50 cents; per dozen, \$4.00.

KIDDER'S BEE-SPRINKLER.

It is a well ascertained fact that cold water is one of the best things known, if rightly applied, to facilitate handling and living bees quickly in swarming time.

The water will cause the bees to cluster closely together, prevents their flying (if cold as it should be,) will partially chill them, and if any of them are inclined to be cross, they will not sting; for this purpose the Sprinkler is well adapted, as they can be sprinkled on a tree twenty feet high and the

operator stand upon the ground. It is got up in condensed form and can be packed in a hive or even in a honey box. They are marbled, making them serviceable and rather ornamental.

The annexed cut represents the use of the Bee-Sprinkler. By having a handle of different lengths, a swarm can be sprinkled thirty feet high upon a tree, if desired.



A HONEY KNIFE,

Which every bee-master should be provided with; of large size, and made of the best spring steel. The blade being

very thin and wide, will be found very handy in removing surplus honey boxes, clearing off the bottom board, or using about the hive generally. Can be furnished if desired.

THE PATENT FUMIGATION PIPE

Is an instrument I have lately invented, which is far superior to anything now in use, to render bees good-natured and manageable in a short space of time; will not injure the bees in the least, as punk (rotten wood,) or puff-ball, or even common smoking tobacco can be used. A swarm of bees can be thoroughly fumigated in five seconds in any box or hive, rendering them perfectly docile and good-natured. The hive can then be turned bottom side up, or surplus honey boxes removed, or the bees even shook out of the hive and handled in the roughest manner. The pipe is well adapted to the use of the apiary, or in taking honey from a tree in the woods. It is so arranged that it can be carried



in the pocket the same as a pencil; can be sent through the mails with safety. Price 25 cents.

On receipt of the price will forward post-paid by mail. A liberal discount to Agents. Full directions accompany each instrument.

After the Pipe is once *loaded* and *fired up*, the operator should keep it in his mouth and blow it lightly occasionally, to prevent the fire from going out, or it can be kept open until ready to fumigate the hive. The operator should be very careful and not blow too hard, especially where the material is very dry, as the heat may unsolder the Pipe.

The cut represents the use of the Fumigation Pipe, which is described on page 123.

THE PATENT COMB SEPARATORS



That I have lately invented, by which I cause the bees to build worker, instead of drone comb. In every hive where they are used, each comb will be worker-comb, and of one exact, uniform thickness, rendering each cell of that depth and size to suit all the wants of the bees in the storing in

of honey and bee-bread or the rearing of worker bees, thus fully preventing the rearing of drones,—a great saving to the bee-man, as drones never collect honey, but consume it in large amounts. Too many drones are a great damage to any apiary.

If the Comb-Frames and Separators are introduced to the hive according to the directions in this book, not a drone will be reared unless the bee-master desires it. (By letting one hive breed drones there will usually be enough for a whole apiary; unless Italian queens are being reared, then it would be well for every hive rearing queens to raise a few drones also.)

Another great advantage gained by the use of the Separators is that they may be used in several hives in one season, providing they come out at intervals of a week or two apart. *Seven* constitute a set.

I suppose the bee-keeper is aware that drone-comb is one and a quarter inch in thickness, whilst worker-comb is only seven-eighths of an inch.

In using the Separators the second time great care should be taken to scrape off all the particles of comb before placing them in the hive, to prevent the bees from sticking their combs to them.

STRAW MATS

I have found to be a very superior article to place over combs of the hive, in the absence of honey boxes. They should be placed over the combs immediately after the surplus honey boxes are removed, on the first of September, and kept there till the bees are set into the cellar, at which time they should be removed and a Preserver placed over the combs; should the cellar be an unusually cold one, and the swarm light, then, perhaps, it would be policy to place the mat over the Bee-Preserver so as to nearly cover the combs within a couple of inches or so. In every instance where

bees are wintered in the cellar the cap part of the hive should be taken off, and kept off for the time that they are in the cellar.

Should the bees be wintered out of doors, then the mats are of great value in keeping the bees warm and absorbing the moisture. I now manufacture them out of straw. When sold they can be packed in hives, if desired. Prices—singly, 35 cents; per dozen, \$3.

KIDDER'S BEE-PROTECTOR

Is an armor every bee-keeper should be provided with. It is *Bee*, *Fly*, and *Mosquito* proof, yet the wearer would hardly know he had it on, as he can see as well with it on, as without it. A lady can wear it as well as a gentleman, by using a bat. Every bee-man should be provided with several to accommodate his guests with when about to visit the apiary. These should be used in swarming time, or in removing box-honey, taking out combs, &c., as bees are not always good-natured upon such occasions. They can be carried in the pocket the same as a handkerchief. They can be used by fishermen or huntsmen when in pursuit of game or fish,—being so manufactured that it will resist any kind of insect. It is made from a species of black linen, expressly for the business,—as all other colors, except BLACK, will produce a blur before the eyes. They are much cheaper, and more convenient, than any kind of veil, or bee-dress, now in use. [Bees will never sting the hands, if properly handled by their master.] The Protector is perfectly cool and comfortable to the wearer.

Invented by the Proprietor. Price, 40 cents, or *three* for one dollar, paying the postage myself. Will forward them, as per order, on receipt of price.

P. S.—This material *has so advanced* in price that it costs nearly three times as much as it did two years ago, therefore I hope my friends will excuse me for charging a trifle more, as I am obliged to do, so to save myself from loss.

KIDDER'S PATENT BEE-HIVES AND FIXTURES, EXPLAINED AND DESCRIBED,

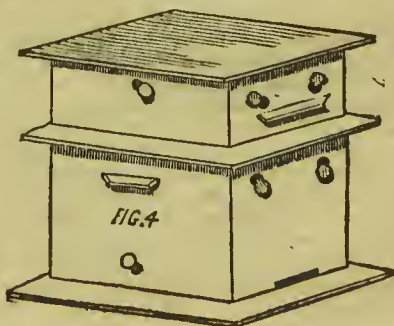
In all their principal points, which I trust will, as they ever have, win the confidence and esteem of all Bee-keepers. The first Patent bearing date of 1858, the second 1860, and the third in 1863.

All of which are combined in the Compound and Glass Hives, and for only one fee—making them the most desirable Hives that have ever been invented.

1st. THE COMPOUND HIVE is so constructed that it can be used in double form, giving a dead air-space around the entire colony; or in other words, it is a hive within a hive.

When the hive is used in double form, as it always should be, (only in case of emergency, as described hereafter,) an even temperature can be constantly kept up, the same as in our own houses. It has been allowed by all scientific bee-keepers who have used this hive, that it excels all others in protecting the bees against the extremes of HEAT and COLD. Bees in this hive will never cluster upon the outside, unless there is a mismanagement about it.

(See annexed cut, Fig. 4.)



2d. **THE COMPOUND HIVE** and Regulator, when properly adjusted, will prevent a swarm of bees, when once put in, from flying to the woods, as they frequently do from all other kind of hives.

The **REGULATOR** is not shown in the annexed cut as it should have been.

3d. **THE COMPOUND HIVE** is so constructed that it is proof against the Moth Miller in every instance. There may be a pint of worms on the bottom board under the combs, and yet none of them can get on the combs if the bee-master will do his duty once in two weeks; there will be nothing to fear from the Moth Miller, as the comb-frames do not touch the hive except at the top; owing to the dead air-space between the inner and outer part, it is impossible for the worm to ascend the combs. But if the keeper will manage the Regulator properly, they will not enter the hive at all. By the use of this instrument any size entrance can be given, from one-fourth inch to four and a half inches.

Or it can be so arranged as to give entrance to worker-bees, and at the same time keep the Queen IN, or Drones OUT, should it be desired.

4th. **THE COMPOUND HIVE** is proof against Bee-robbery, as no swarm of bees can rob one, if the Regulator is set at the proper gauge. It is also furnished with a **BEE-CATCHER**, with which a swarm of wild bees can be captured from a tree, or elsewhere, in a few hours time.

By the use of it a swarm of robber bees can be captured in a hive by themselves, and will work for us the same as our other bees—thus preventing the robbery effectually.

Or when a swarm is to be sold in the middle of the day, all the bees from the field can be called in, in less than one hour, and save the trouble of removing them in the night, as they now have to be, in order to secure all the bees.

By arranging the Bee-Catcher in connection with the Regulator, all the Drones in the hive can be destroyed in twenty-four hours, as they can readily pass out of the hive, but owing to their large size cannot return again.

If the hive is supplied with the COMB SEPARATORS there will no drones hatch.

5th. VENTILATION, which is so essential to all bee-hives, the Compound Hive is well provided with. By the use of the Bee-Preserver a swarm can be shut up and removed a thousand miles, if desired, with safety.

6th. THE COMPOUND HIVE is supplied with nine Comb-Frames, 12 inches in depth by 14 inches in length, which can be taken from the hive separately, any time when desired, even when filled with honey and covered with bees.

There is a device on the top bar which will cause the bees to build their combs straight within the frames every time, and does not interfere with any other patent.

7th. THE COMPOUND HIVE is so constructed that it can be used as a non-swarmling hive, by letting it out and using it in single form, thus preventing natural swarming, should it be desired. When let out to its full capacity, it will hold near three bushels, or near three hundred pounds of honey.

8th. THE COMPOUND HIVE can be used as two separate hives by the use of a common rough board the size of the top of the hive, until their master can make a hive or send and get one. In case swarming should take place, and having only the one hive on hand, then the combs and bees can be transferred into another hive in three minutes.

9th. THE COMPOUND HIVE is so constructed that a swarm of bees can be hived in less than half a minute, if they alight where they can be shook off.

10th. THE COMPOUND HIVE is so arranged that the outer part of it can be turned bottom side up, as a stand to set the inner part upon, thus giving a single SWARMING HIVE whilst the other part is used as a platform.

11th. THE COMPOUND HIVE is adapted to so many changes, can be manufactured at a cost of from \$1.50 to \$3.00, depending on the price and quality of lumber, style of painting, &c. Before the war good hives could be got up for less than \$1.50 each.

Parties purchasing the Right, or a Hive and Right, will receive a book of directions FREE; showing how to manage

both the Compound and Glass Hives at all seasons of the year.

FIGURE 5 represents the larger or outer portion of the Compound Hive; used as a separate hive in case of emergency. When the combs are removed nearly all of the bees will stick to them. This hive is covered with the board shown in Fig. 1, with a block or brick-bat laid upon it with a loose board over that, to prevent the combs from melting should it stand out in the sun. If shaded by a tree or building this second board would not be necessary. This hive contains near 2,700 cubic inches, and holds about five pecks dry measure.

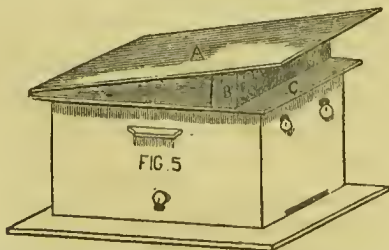


FIGURE 3 represents the inner or main portion of the Compound Hive as a single or swarming hive setting upon a loose bottom board; to be used thus, only in case of emergency, such as the dividing of a swarm or artificial swarming, or the hiving of a swarm, in case two swarms should come out at about the same time; in case the bee-keeper has only the one hive, he can use this, as well as Fig. 5, as two separate hives, by furnishing each with frames. This will give the bee-keeper time to make another hive or send and get one, as the frame, and bees can readily be transferred to a new hive any time and not discommode the bees in the least, and when desired, the top boards and frames can be removed

from Fig. 5, and Fig. 3 set within it, which will constitute the Compound Hive.

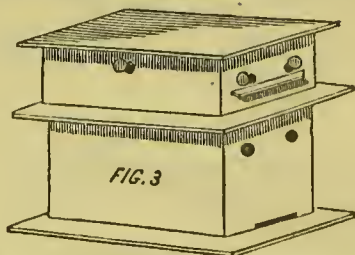
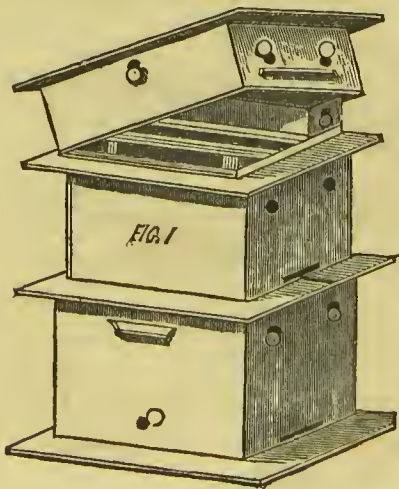


FIGURE 1 represents the hive in a non-swarming condition, by taking the inner part or main hive out of the larger part



and placing a division board between the two, with a large hole in the centre to admit the bees to pass from the upper to the lower part, and giving the bees entrance from the outside to both parts.

THE COMPOUND HIVE as represented in Fig. 1 is a non-swarmer, or two stories high, beautifully proportioned, and will hold over 250 pounds of honey when filled. In this position it will also accommodate two or three swarms of bees, should the bee-keeper have them come out together as is frequently the case, thus enabling the bee-master to divide them at pleasure without loss or injury. Or it can be used for one swarm, giving plenty of room for increase, and thus prevent natural swarming.

Where large quantities of honey are desired from a single swarm this form (Fig. 1,) is most desirable. We should always bear in mind that when put in this condition one-half of the combs and honey should be put in the under part, filling up each with empty frames, as they will then go to work immediately in both parts.

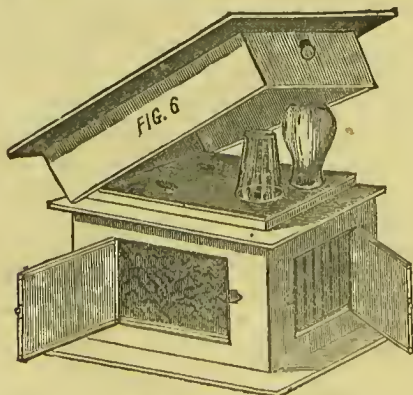


FIGURE 6 represents the GLASS or OBSERVATORY HIVE, which is well adapted to stores and offices. The same comb frames and boxes can be used in either hive. By using a honey-board, tumblers, decanters, or any other vessel or box, can be used for surplus honey, by first sticking in a little comb by means of a bit of melted beeswax. The above cut represents the cap partially elevated, showing two glass receptacles, the others having been removed. The hive will accommodate some sixteen pint tumblers at a time. When a hive occupies a room it should stand by a window so as to give the bees access out under it, they will not come into the room if properly placed at the window.

Every bee-keeper should have one or two of these hives at least for OBSERVATORY or EXPERIMENTAL purposes.

Parties purchasing the right, will be entitled to the drawings, directions and measurements for manufacturing, so that any person who can handle tools can make the hives rapidly.

A complete hive is much better to make from than any drawing that can be got up.

It is much better for parties to purchase the Compound and Glass Hives all complete to start with, and then the arrangement is perfect.

SILVER MEDAL.

The annexed cut is a fac-simile of a Silver Medal awarded me as a SPECIAL PREMIUM by the New York State Agricultural Society in 1862, aside from the First Premium, which was also awarded me.

And it will be remembered that nearly all of the modern style of Hives were there in competition on the ground.

It is also well known that the Compound Hive is the best Movable Comb Bee-Hive ever patented, which has taken the First Premium over all competitors in every State where it has been exhibited, and at the New York and Vermont State Fairs, three years in succession.

But having added another improvement which was patented March, 1863, I will now challenge the world to pro-

duce a better Bee-Hive either for swarming or non-swarming purposes, or for general management.



PRICE LIST FOR 1865.

Individual or Farm Right.

For manufacturing and using Kidder's Patent Movable Comb Bee-Hives, patented in 1858, 1860 and 1863; which will allow the purchaser to make, or get made, as many hives as may be desired for his own *individual* or *farm use*, embracing the three patents, having seventeen years to run from March, 1863, only one fee, \$5 00

Individual Rights! Club Rates.

TWO RIGHTS, if ordered at the same time, . . .	\$8 00
THREE RIGHTS, if ordered at the same time, . . .	10 00
FOUR RIGHTS, if ordered at the same time, . . .	12 00

Compound Hives and Rights Complete.

Which will embrace one of the latest improved styles of the *Double* or *Compound* Hive, including nine *comb frames*, of improved style; one *Regulator*; two large surplus Honey Boxes, with large glass in one end; one set of (seven) *Comb Separators*; one *Bee-Preserver*; one *Bee-Catcher*; one *Bee-Protector*; one *Fumigation Pipe*; one *Book*, showing how to manage and handle bees in any hive; also, including the *Right* to manufacture and use the hive, for the small fee of . . . \$11 00

But if a *Straw Mat*, two extra boxes, and twelve extra Comb Frames are included, only one dollar more; making in all . . . 12 00

These three latter articles should always be included to replace full boxes and frames, that may be taken from the hive during the season.

Bees that have not been hived longer than three days, may be shaken into one of my hives, and will go to work immediately, thus giving parties a chance to send and get them, where they are not already supplied.

Club Rates for Compound Hives and Rights Complete.

TWO HIVES, furnished with all of the fixtures as above, if ordered at the same time, ten dollars each . . . \$20 00

THREE OR MORE HIVES, with the same fixtures, if ordered at the same time, nine dollars each, . . . 27 00

IF MATS, EXTRA COMB FRAMES, and EXTRA BOXES are included, (as they should be,) one dollar additional to each hive, making for three complete, . . . 30 00

Glass Hives and Rights Complete,

Will come one dollar higher than the compound hive with the same fixtures.

GLASS HIVES, for experimental and observatory purposes, nicely painted and grained, embracing nine *comb frames*, one *Regulator*; two large surplus honey boxes, with round glass in ends, . . . \$12 00

Agency of Hives, Rights, &c.

Any person purchasing a Compound Hive and right complete, as above, . . . \$12 00
 A GLASS HIVE, with the fixtures as above, for . . . 6 00
 A BEE-SPRINKLER AND HONEY KNIFE, for . . . 2 00
 Which will amount to . . . 20 00

I will then give such parties the agency of their respective towns for the sale of Hives, Rights, Fixtures, &c.

For terms, send for agent's circulars for 1865, which will be forwarded to those desiring the agency with the first bill of articles sent.

Compound Hives, at Wholesale Prices.

When parties have purchased a Compound or Glass Hive, all complete, and desire other extra hives, they will come as follows:—

Painted, grained, including nine frames, two boxes and regulator, . . . \$3 75
 COMPOUND HIVES, painted white, with the same fixtures, . . . 3 50
 If separators and preserver are included, one dollar more per hive, . . . 4 50

Fixtures for Hives.

STRAW MATS, each, . . . \$0 35
 " " by the dozen, . . . 3 00
 BEE-PROTECTORS, each, (by mail or otherwise,) . . . 40
 FUMIGATION PIPE, each, (post-paid, by mail,) . . . 25

SECRETS OF BEE KEEPING, (1865,) (post-paid, by mail,)	\$0 35
ITALIAN BEE BOOK, showing how to rear Italian Queens, and keep the stock pure,	40

Price of Business Circulars per hundred, \$2. Where *Agents' Cards* are printed on cover, an additional charge of \$1 per hundred, unless three or four hundred are ordered at one time, *when a reasonable reduction will be made.*

Persons ordering fixtures for hives had better order a Compound Hive at the same time, as the fixtures can be packed in one and save an extra charge for a box. Hives to pack in, will be sent at wholesale rates. It will be understood that these fixtures, hives, &c., are not furnished to parties not having the right for using my hives.

Compound Hives, Unmade,

Made out of good merchantable pine lumber, all cut and dressed and rabbeted and fitted to go together, each hive, including two large boxes, bottom boards perforated with large holes, with glass set; one Metallic Regulator ready made; nine comb frames; also, including nails, brads, and serews to put them together with, all packed in shucks and boxes, per hive, \$2 50

If a set of seven separators are included, all perforated with holes and furnished with cleats and brads, ready to put together, per hive thus furnished, 3 00

If ready-made preserver is included, 3 50

THE PURCHASER OF UNMADE HIVES should be particular and order in lots of *three, six, nine, or twelve* at a time, for the convenience of packing, and shipping: as it is very inconvenient to pack a less number than three hives.

BOXES, READY-MADE, fitting the different hives, holding from 20 to 25 lbs. each, per dozen, 3 00

BOXES, PARTLY MADE, the eight holes being cut out

of the bottom boards, and the glass set in the ends, with brads to make the same. Price, per dozen, .	\$2 50
BOXES, small size, holding from two to three pounds, (twelve of them covering the top of the hive,) when made of all wood, per dozen, ready made, .	1 00
When there is a round glass three inches in diameter, on each side, per dozen,	1 25
When the sides are wholly of glass, per dozen,	1 50
Twelve of these small boxes can be packed inside of the two large boxes when shipped away.	
BOXES, half size, holding ten or twelve pounds, ready made, with bottom bored, and large glass in one end, per dozen,	2 50
BOXES, half size, unmade, with glass set and bottom board, per dozen,	2 25
<i>The same</i> , unmade, without glass, and perforated bottoms, per dozen,	1 50

Trimmings for Unmade Hives.

Where parties desire to make their own hives, and purchase their trimmings of me, (as many prefer after purchasing the first hive,) the following is a complete set for one Hive:

ONE REGULATOR, nine Comb Frames, <i>twelve buttons</i> , to darken the ventilators, thirteen wire gauzes to prevent the bees from passing through the ventilator holes, also, brads to make the frames with, and screws to attach the buttons to the hive with, the whole amount for <i>one hive</i> will be	\$0 60
FIXTURES for twelve Hives as above,	7 00
COMB FRAMES, unmade, per hundred,—new pattern—including brads,	2 50
Top bars for comb frames, per hundred,	2 00
BUTTONS, bored and rimmed to accommodate the screws to cover ventilators, per hundred,	40
SCREWS, per hundred, to put them on with,	35
WIRE GAUZES, for ventilation, per hundred,	40

REGULATORS, with metallic thumb screw, per dozen,	\$1 50
REGULATORS, when sold singly,	25
THUMB SCREWS, separate from regulators, per doz.,	75
BEE-PRESERVER,	50
“ “ per dozen,	4 50
BEE-CATCHERS, <i>right to use and make the same</i> , (when bought separate from hive,)	3 00
It is always better for parties to purchase the <i>Compound Hive complete</i> , then a bee-catcher will be included.	
SEPARATORS, per set, (7) ready-made,	75
“ per set, with cleats and brads, partly made,	60
SEPARATORS, per dozen sets, ready to put together, unmade,	6 00

Bee Hunting Box.

Upon a new principle for hunting Bees which can be used as two separate boxes when a cross line is to be taken, or when two separate lines are to be established, \$1 00

Price List for Common and Italian Bees, for 1865.

PRICE OF FULL ITALIAN SWARM, with Compound Hive, including the right, Separator, Preserver, Protector, Bee-Catcher, Fumigation Pipe, Books, &c.,	\$25 00
GLASS HIVE instead of Compound, with the above fixtures,	26 00
PRICE OF COMMON SWARM with Italian Queen in- troduced in Compound Hive, including right, fix- tures, &c., all complete,	23 00
PRICE OF A FULL ITALIAN SWARM in Compound Hive, with Preserver, if the party has purchased the right previously,	20 00
PRICE OF COMMON SWARM with an Italian Queen introduced, including Compound Hive and Preser- ver, where a party has purchased the right, hive, fixtures, &c., previously,	17 00

PRICE OF COMMON SWARM of Black Bees, with the compound or glass hive, including right and fixtures, all complete, \$20 00

NOTE.—Parties will gain but little in purchasing a full Italian swarm, as it only requires about three months for a swarm to become Italianized after an Italian Queen has been introduced. As I can only furnish a limited amount of Italian swarms, I would therefore suggest that the purchaser order the common Black Bees with an Italian Queen introduced, as a portion of the swarm will become Italianized by the time I ship them. A large part of them will bear the stripe if not sent until October or November, which is the most proper time to ship them, especially if they are to be shipped any distance.

A swarm of this kind is just as good for another year's operations, and cost less money.

Price of Italian Queens for 1865.

PRICE OF ITALIAN QUEEN, with a few hundred workers to insure her safe conveyance to the place of destination, \$6 00

It will be understood that the workers sent with the Queens are usually of the common kind, and are of no account whatever more than to take care of the Queen on her journey; common bees answering for the purpose just as well as Italians. They are not calculated, as many suppose, to commence new colonies with. With this limited amount, it cannot be done.

PRICE OF TWO QUEENS if sent to one address,	\$10 00
“ THREE,	14 00
“ FOUR,	18 00
“ SIX,	25 00

Persons ordering Queens would do well to adopt the use of my hives, if they have not got them already. Bees and Queens always shipped by express, and hives, &c., can be

sent by the freight lines for less than half the express prices.

Persons desiring Queens for the coming season will do well to send in their orders soon. **FIRST COME, FIRST SERVED.**

The express charges being as much on the collection of five or ten dollars as on a hundred, prevents me from collecting through them, especially on small amounts.

At the very low prices I am now selling goods for, it will not be expected that I can pay for collections or freights.

Parties ordering goods will do well to read over the price list several times, and be sure and give the prices of the articles ordered according to the list to avoid mistakes.

And if living in the distance, the purchaser will please enclose the money with the order, as far as practicable.

For a more particular description of hives and bees, send for "The Secrets of Bee-Keeping."

All mailable articles forwarded on the receipt of price.

(Ministers of the Gospel are entitled to a complimentary card to use my patent hive free of charge.)

Parties ordering hives, &c., can have the privilege of paying for the same at their nearest railroad station on receiving the goods, should they desire it, if not too far away.

Persons residing west and south of York State will do me the favor to enclose the money, with the order, if convenient, as it will save me some trouble and expense in collecting.

Parties need have no fear of sending their money in advance, as they will surely get what they order, or their money refunded. I have received hundreds of dollars through the mails and have not lost a dollar this two years. It should be wrapped in a thick piece of letter paper and enclosed in a thick buff envelope, and there will be no trouble.

Freights on a large package are but a trifle, if any, more than on a small one.

I have no objection to answer communications if a stamp is enclosed. Parties writing, will please write their names and P. O. address distinctly—to avoid mistakes.

Bee-keepers infringing upon my patent-hive, or any part of it, will be prosecuted to the full extent of the law. Any person giving information will be suitably rewarded.

I am constantly in receipt of letters asking for hives on credit either for their own use or to sell to others. Owing to the great rush of business I now have to attend to, it will be impossible for me to comply with their requests. The sending of references would all be very well in ordinary times. With the help of several assistants, I have all I can possibly do in answering letters and filling cash orders. Consequently I have no time to look after references, but have to confine myself to a cash business exclusively. Therefore I hope my friends will excuse me and send their money instead of references.

Customers ordering hives will please look over the list of articles carefully. The hive can be filled with fixtures for other hives, small boxes ready made or larger ones unmade. By letting out the hive it will hold fixtures for a dozen hives, besides a dozen or two of boxes, and the freight would be no more than on a separate hive, and at the same time when frames, boxes, &c., are ordered it would be economy to have them packed in a Compound Hive, as the freight would be no more than on a common box. The hive I will call at the low wholesale price, as per price list in this book.

Italian Bee Book sent free to all parties ordering Italian queens.

Guide to Apiarian Science.—Edition of 1858 is now exhausted. Another season I anticipate issuing an *improved and enlarged* edition, which will probably come at one dollar each, bound in muslin, with gilt back, which will be purely a practical and scientific work.

Secrets of Bee-Keeping, published in 1863, is now exhausted. I therefore refer the bee-keeper to the present

volume, which is very much enlarged and improved. It is a book that should be in the hands of every bee-keeper. The unexpected high price of materials, and the enlarging of the book beyond my expectation, compel me to charge 35 cents instead of 25 cents, as I first advertised.

German edition of *Secrets* ready for distribution in the fall of 1865. Price 50 cents.

For full particulars for Hives, Rights, &c., in fact everything pertaining to the cultivation of the Bee, see book. Circulars sent free, if stamp is enclosed to pay postage.

Customers ordering Hives, Fixtures, &c., will please order according to the List, and be particular in giving the price as well as the article, distinctly. Also, give explicit orders how to mark and ship the goods, to *avoid mistakes*. As far as practicable the purchaser should remit the money with the order, either *Treasury Notes*, or on some *National Bank*. By shipping as railroad freight, the expense will be trifling.

Customers will get their goods without delay when paid for in advance, which will not be the case when a heavy bill of collections accompany them, as one railroad company very frequently refuses to receive goods from other companies and pay the heavy charges. To insure a speedy arrival, there should be no charges to follow the goods except the regular freight bill

TERRITORIAL RIGHTS FOR SALE
IN
STATES, COUNTIES AND TOWNS,
ON REASONABLE TERMS.

Advantages in purchasing Territorial Rights.

Parties desirous of realizing a large income from a small capital, can now find a chance unequalled, all things considered. Whoever purchases territory of me buys an interest

in the best BEE-HIVE IN THE WORLD, the patent nearly new, having fifteen years yet to run. It is universally known, being introduced in nearly every county in the Northern and Western States, and almost every State from Maine to California, with an increasing demand; so much so, that I cannot much longer supply from a single manufactory one-fourth of the custom, but shall be obliged to establish branch manufactories in New York, Cleveland, Ohio, and Chicago, Ill., to supply the Middle and Western States. I can give employment to 1,000 active energetic men or women, immediately, with a capital of not more than \$25. I sell territory from \$25 to \$50, that you can make more than \$500 on in a short time. Already I have Agents, both men and women, that are realizing handsome incomes in this enterprise. My advertising system is on a grand scale, and the system is such that almost every family in the land is posted from year to year; and the present season, my book will be in the English and German languages. Every person buying territory of me, will have the benefit of this. My circulars and advertisements are distributed through most of the mail routes in the United States, weekly. Any person who will first purchase of me a Compound and Glass Hive, with fixtures all complete, for \$20, as per price list in this book, I will give them the agency for the sale of my hives, rights, books, &c., in their vicinity. Agents' Circular for 1865 will be forwarded with the first bill of goods, if the purchaser desires it.

A Handsome Present to every one Buying a County Right.

To any person buying the Right of their County at my regular rates, I will give them one of my COMPOUND and GLASS HIVES, all complete, painted and grained.

This is a rare chance, as they will have the most complete set of BEE-HIVES in the world, and have full control of the

County to manufacture and sell without restriction. And by supplying your town you get your money back,—which any energetic man can do in a short time.

When a few persons will club together, and take the right of a town, an interest in the whole town will cost them no more than an individual or farm right,—thus securing to parties a territorial interest with a farm right, for one fee.

NOTE.—The price of territory varies according to the population, the amount of bee-keepers, locality, &c.

NEUE HERAUSGABE AN BIENEN.

Geheimnisse der Biennenzucht. Diese werden im December, 1865, in der Deutschen Sprache erscheinen. Es ist das einzige Buch in dieser Sprache an Bienen welches je in den Vereinigten Staaten publicirt worden ist.

Dieses Buch unterrichtet den Bienenzüchter wie dieselben in achtzehn nehmen sind damit keine verloren gehen und er den Gewinn von fünfzig bis hundert Pfund Honig in einer Lehrzeit von einem Bienenkorb ziehen kann.

Wen diejenigen welche Interesse fuer eine eintragliche Bienenzucht haben koennen 50 cts. So wie ihren Namen Post Office. Adresse znschicken and es wird zugesenden das Buch.

K. P. KIDDER, Burlington, Vt.

N. B.—For full and explicit directions for using my Hive, be sure and send for the "SECRETS" for 1865. Price 35 cts.

ARTIFICIAL HONEY.

Any person sending me a list of the bee-keepers in their vicinity, with the Post Office address of each Town, County and State, plainly written, I will send him a recipe for making ARTIFICIAL HONEY. This recipe has been sold to hundreds for \$5 each. And also a recipe for making the once famous drink of the ancients, METHUEGLIN, a pleasant and delightful beverage, that ought to take the place of the now poisonous drinks that flood the country.

BEE-KEEPER'S ALMANAC FOR 1866, now in process of compilation, ready for distribution Dec. 1st, 1865, will be sent by mail on receipt of a two-cent stamp to pay postage. It will contain much valuable information on bee culture.

ALL ORDERS PUNCTUALLY ATTENDED TO.

Will my friends please send me a list of bee-keepers and their P. O. address.

Note.—Owing to the great haste in which this book has been prepared for press, the Reader will please excuse all typographical and grammatical errors, as they will be remedied in the next edition.

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